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An Investigation of the Student Equity Effects of the Public School Finance System in Louisiana.

Barbara Yates Lacost

Louisiana State University and Agricultural & Mechanical College

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**An investigation of the student equity effects of the public
school finance system in Louisiana**

LaCost, Barbara Yates, Ph.D.

The Louisiana State University and Agricultural and Mechanical Col., 1988

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**300 N. Zeeb Rd.
Ann Arbor, MI 48106**

AN INVESTIGATION OF THE STUDENT EQUITY
EFFECTS OF THE PUBLIC SCHOOL FINANCE
SYSTEM IN LOUISIANA

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in
The Department of Administrative and
Foundational Services

by
Barbara Yates LaCost
B.S., Illinois State University, 1964
M.Ed., University of Illinois, 1981
December 1988

DEDICATION

This dissertation is dedicated to my son, David,
for his unwavering support, belief, and sacrifice.

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I wish to express my appreciation to my committee members, each of whom has contributed in his or her own special way to the completion of this document. Dr. Terry G. Geske, my chairman, not only opened my eyes to this opportunity but provided strong support and encouragement through the long process. He introduced me to the study of school finance, and I could ask for no better mentor. Dr. Diana Pounder's review of drafts, careful questioning of terms and principles, and strong support were heartily appreciated. I thank Dr. Joseph Licata for his continued support and pertinent questions about form and Dr. Richard Lomax for his generosity in agreeing to serve on the committee late in the process. Dr. David Johnson's probing questions and critical review contributed greatly to the document.

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ABSTRACT

The purpose of this study was to examine the effects of the Louisiana school funding system on two dimensions of student equity: equality of opportunity and equal treatment of equals. This was accomplished by assessing alternate year data from 1977-78 to 1985-86 in order to document changes, if any, that occurred in the equality associated with the distribution of state and local revenue. Berne and Stiefel's (1984) conceptual framework for measuring equity was utilized to determine the variables and measures used. Of first importance was the investigation of equal opportunity. This principle was represented by the fiscal neutrality standard, which was defined as a lack of relationship between per-pupil revenue and local fiscal capacity. In order to provide a more comprehensive assessment, local fiscal capacity was alternately specified as (a) property valuation per average daily membership (ADM), (b) sales tax capacity per ADM, and (c) combined property valuation and sales tax capacity per ADM. For each specification, multiple measures assessing the strength of the relationship between per-pupil revenue and capacity per ADM were applied.

The second principle of student equity, equal treatment of equals, was represented by the degree of

disparity among per-pupil state-local revenue and was again multiply assessed. Three univariate measures determined the degree of dispersion in the distributions of per-pupil revenue for the five years included in the evaluation.

A secondary analysis explored the interrelationship among three local sources of school revenue for 1977-78, 1981-82 and 1985-86.

Two conclusions were drawn from the analysis. First, there was observable change in both fiscal neutrality and degree of disparity in per-pupil revenue. Second, the results associated with the two principles conflicted. Fiscal neutrality worsened from 1977-78 to 1988-86, whereas disparity in revenues per pupil improved for the general school population, but not for students in the lower half of the distribution.

CHAPTER I

INTRODUCTION TO THE STUDY

This chapter introduces the study, provides a background for investigating the problem, presents the problem statement and concludes with a description of financial information pertinent to understanding the funding of public schools in Louisiana.

Introduction

Continued attempts to examine and address issues of financing public elementary and secondary schools have focused considerable attention on principles such as educational equity, efficiency, adequacy, and choice. Equity concerns, long considered a dominant theme or criterion in school finance policy evaluations, have led to various notions of equality and to the development of state aid equalization systems.

During the 1970s and early 1980s, many states attempted to improve the equity of their school finance programs by diminishing the link between local school district wealth and spending (Cohn and Geske, forthcoming). Although Louisiana was not one of the school finance reform states, its Minimum Foundation Program (MFP) usually received high marks for its student equity

effects, when compared with others states in national studies in the 1970s (Odden, Berne, and Stiefel, 1979; Alexander, et al, 1980, pp. 156-160). This phenomenon was partially attributable to its high level of state support. Over the years, state support declined (from 57% in 1977-78 to 53.6% in 1985-86) and local districts increased their use of local revenue to support schools (Louisiana Department of Education, 1978 and 1986). Since research indicates that a shift from state to local reliance can contribute to inequality, this study sought to investigate the effects of Louisiana's public school funding system on student equity from 1977-78 to 1985-86.

This study utulized a four-step conceptual framework for measuring equity in school finance developed by Berne and Stiefel (1984). The framework requires answers to the following questions: (a) For whom should equity be provided? (b) What resources should be distributed fairly? (c) What principles should be used to determine equitable distribution? and (d) What quantitative measures should assess equality? Each question generates various answers, and the answers incorporate certain value judgements (Berne and Stiefel, 1984, p. 5). These questions guided the selection of

resources, principles and measures used in this investigation.

Background of the Problem

Cubberley (1905) was one of the first to conceptualize the state's responsibility for providing equalization in educational services and funding apportionment. His ideas were subsequently modified and expanded by other theorists such as Updegraff (1921), Strayer and Haig (1923), Mort (1924), and Morrison (1930), resulting in the development of differing concepts of equalization programs for providing and appropriating funds for public schooling.

Although researchers, policy makers, and the courts continue to argue the factors constituting an equitable state school finance system, nearly all state aid equalization programs characteristically encompass two major dimensions: (a) a method of measuring both the local school districts' financial ability to support education and effort expended, and (b) a procedure for allocating funds which incorporates those factors of ability-to-pay and effort (Corbally, 1962). A local district's ability-to-pay, or its fiscal capacity, has typically been measured in terms of property valuation per pupil, whereas its effort has been measured in millage rates. In allocating funds so that the revenues

per pupil are more fully equalized within the state, state equalization programs typically subsidize more heavily those districts with low fiscal capacity.

Four basic models, and combinations thereof, guide state policy makers drafting state school finance plans. These models include full state funding, district power equalizing, percentage equalizing, and the minimum foundation program. Whereas full state funding assumes the total operating expenses of local school districts, district power equalizing and percentage equalizing programs link the degree of aid provided by the state to some local dimension, e.g., increases in per pupil expenditures relative to the wealth of the district in the former case and changes in tax effort in the latter. The Minimum Foundation Program (MFP), first establishes a minimum, or foundation, level of educational funding per student. The state financial obligation is limited to providing the additional funds required to bring local revenue, obtained through applying a mandated tax rate to the tax base, up to the prescribed foundation level per student.¹

Litigation has intensified the interest in equality that was expressed by the early school finance theorists. Utilization of the judiciary branch of government for the establishment of equal opportunity

norms was established through the Brown vs Topeka (1954) decision (LaMorte and Williams, 1985); however, it was the 1971 Serrano decision, declaring that the California school finance plan denied equality of opportunity to public school students, which spurred the reformation of state public school financial plans. Thus, the Serrano decision is considered the landmark case among school finance researchers.

The Serrano decision introduced to the school finance community the important concept of educational fiscal neutrality², which states that a child's education cannot be a function of the wealth of the district in which he lives but must be a function of the wealth of the state as a whole. In other words, there should be a neutral relationship between revenues (or expenditures) per pupil and a district's wealth, or fiscal capacity. The concept of fiscal capacity, although continually broadening, has traditionally been measured as property valuation per pupil. Funding programs that do not provide methods of reducing the relationship between property valuation and revenues per pupil are generally considered inequitable by school finance researchers.

Judicial activity in the early 1970s culminated at the federal level with the Rodriguez vs. San Antonio

(1973) case which decided that state finance systems "did not violate the equal protection guaranties of the federal constitution" (Benson, 1978, p. 342). Blocked at the federal level, numerous school finance plans were subsequently challenged by reformers seeking relief in state courts. These challenges pressured state policy makers to examine and revamp financial plans, resulting in changes in more than half the states during the 1970s and early 1980s (Cohn and Geske, forthcoming).

Only seventeen challenges to lower court decisions had reached state supreme courts by 1986. Seven decisions were upheld, but ten state supreme courts outrightly rejected the reformers' claims (Briffault, 1987). The state court responses of the early 1980s have appeared less favorable to change and somewhat more conservative in their recommendations suggesting that the judicial process may ultimately contribute substantially less to the equality movement during the 1980s than it did during the 1970s (LaMorte and Williams, 1985).³

In those states that enacted new, or significantly changed, school finance programs during the 1970s and early 1980s, state policy makers appeared to direct efforts towards improving the equity of school finance systems in hope of assuring more equal educational

opportunity. Most efforts attempted to promote more equal expenditures per pupil by equalizing the tax bases of local school districts thereby breaking the link between district spending and property wealth (Geske, 1983).

Accompanying and/or swiftly following the judicial flurry and subsequent program changes of the 1970s, a number of equity and evaluation studies examined state equalization programs. These studies raised several issues regarding both the content and method of measurement. Most studies evaluated at least two major equity criteria: the disparity in revenues (or expenditures) per student, often referred to as horizontal equity or equal treatment of equals, and the relationship between district fiscal capacity and those revenues (expenditures), referred to as fiscal neutrality. Researchers were divided, however, on such factors as definitions of revenue and expenditures and appropriate statistical measures.

Although it is agreed that the reforms of the 1970s increased state funding and may have generally improved equity of school financing for both pupils and taxpayers, one major concern for researchers of the 1980s is the

"...measure of local wealth or the factors other than real property that should be used in determining the relative fiscal capacity, or wealth, of local districts" (Furno & Magers, 1981, p. 188).

In a number of states, the freedom of local school districts to utilize additional sources of revenue other than those designated as the official measure of local wealth in the school finance plan has contributed to "non-inclusiveness." This lack of inclusion is especially undesirable if unofficial sources vary across districts because it will increase the degree of revenue inequality and decrease the relationship between revenues per student and the official fiscal capacity of the local district (Jones, 1985).

A few states have made recent efforts to define wealth, or fiscal capacity, more comprehensively in school finance formulas. Both income and property tax bases, for example, define local fiscal capacity in Kansas, Pennsylvania, and Maryland. The sales tax base is included as part of the wealth base of local districts in Nevada and Virginia (Alexander et al., 1980; Carroll and Park, 1983). Nevertheless, the majority of state plans rely on the property tax base and ignore additional sources of revenue. Louisiana school districts, in particular, rely heavily on local sales tax for school revenues, and several utilize non-tax

income derived from school-owned lands rich in mineral resources. Neither of these sources is included in the state's calculations of local fiscal capacity to support public education.

Problem Statement

One major purpose of state school finance systems is the promotion of equality in funding among public school students throughout the state. In most cases, this involves two equity dimensions. Movement toward greater equality means that (a) the relationship between school district capacity and spending would be reduced, and (b) expenditures per student would become more equalized throughout the state. The first of these two dimensions is usually discussed in terms of wealth, or fiscal, neutrality. In the Berne and Steifel framework, it is representative of the principle of equal opportunity. The second dimension is discussed in terms of disparity in per-pupil revenues and is representative of the principle of equal treatment of equals.

The actual question behind this study is "What has been the effect of the Louisiana public school funding system on these two dimensions of student equity over a nine-year period from 1977-78 to 1985-86?"

First, the criterion of equal opportunity, represented by fiscal neutrality, was assessed by determining

the degree of association between revenue per pupil and district fiscal capacity. Fiscal capacity was alternately defined as (a) taxable assessed property valuation per average daily membership (ADM), (b) sales tax capacity per ADM, and (c) combined property valuation and sales tax capacity per ADM. An analysis of the three sets of data provided information regarding the impact of alternative tax bases on fiscal neutrality.

The second criterion of equal treatment of equals required that the degree of disparity in revenue per pupil for each of the evaluation years be determined: the greater the disparity, the greater the inequality in revenue. An analysis of the data provided information about the ability of the school finance plan to provide for the equal treatment of equals over time.

In addition, the relationship among property tax revenue, sales tax revenue and other local revenue sources was thought to be significant. Districts receiving 1% or more of their local revenue from rental and land-lease (RLL) revenue generated through royalties, rents, sales and/or lease of district-owned school property were examined. The relative reliance placed on each source was first determined and changes over the period of the study were then assessed.

Funding Louisiana Schools

Understanding the financing of public schools in Louisiana may be clarified through an initial investigation of the funding of public services in general. This section documents alternate sources of revenue for financing public services, describes the transfer of federal and state funds for financing education, and concludes with a description of the Minimum Foundation Program in general and in Louisiana in particular.

State and Local Revenues

The strong energy orientation of the Louisiana economy contributes to a unique tax structure that demonstrates an

unusual dependence on severance and sales tax and a remarkably small reliance on the property tax (especially for local governments) and the income tax (Scott, 1987, p. 1).

This same orientation provides additional mineral source revenues through royalties, bonuses, and rentals of state-owned lands (LSU and CABL, 1987a). Thus, severance and sales taxes are the significant sources of revenues for the state general fund which supports, along with other services, public education. Furthermore, local revenue is highly dependent on sales tax, rather than property tax capacity.

Rental/Land-Lease Revenue

Louisiana's revenue from natural resources has fallen sharply since 1982. Combined revenues from severance taxes and royalties, bonuses and rentals from state-owned lands and waterbottoms peaked at just over \$1600 million in 1982, but had fallen to only \$730 million by 1987. This represents a 55% decline over five years (LSU and CABL, 1987a).

Sales Tax Revenue

Both state and local revenues are derived from the general sales tax. The national recession of the early 1980s, the decrease in world price of oil and the subsequent higher rates of unemployment, and the growing number of sales tax exemptions legislated in the 1970s and early 1980s, contributed to the increase in the state sales tax rate to 4% in 1984 (Hildreth, 1987). State sales tax collections in 1985--30.9% of total state revenue compared to the national average of 32.2%--categorized Louisiana as having average reliance on sales tax (U.S. Department of Commerce, 1985). However, the combined state and local sales tax collections--over 20% of total state and local revenue compared with 14% nationwide--indicated that the state's relative total reliance on the sales tax was substantially greater than the nation's (Ryan and Johnson, 1987).

With regard to local government alone, the 1984 general sales tax revenue was \$950 million, or \$213 per capita. When compared to the national average of \$54 per capita, the significant local reliance is apparent. Local Louisiana governments received 27.8% of own source revenue from the sales tax as compared with the national average of only 6.4% in 1984 (Hildreth, 1987).

Property Tax Revenue

The state of Louisiana has a constitutional right, not presently invoked, to tax real property, but local governmental units atypically rely very little on the property tax for the support of local services (LSU and CABL, 1987b). While the property tax generates about 75% of local government general revenue in the nation (Shilling, 1987), it comprises only 21.5% of general revenues in Louisiana (Hildreth, 1987).

Factors contributing to the underutilization of the property tax include deletions and exemptions to the base, levy limits, and administrative aspects (Hildreth, 1987). To begin with, the base is eroded through both removal of property from the tax rolls and through exemption after valuation. Louisiana's constitutionally mandated homestead exemption has removed, when measured as a percentage of total property tax revenues, more

individually-owned residential property from taxation more than any other state (Shilling, 1987).

The mandated homestead exemption (Article 7, section 20 of the 1974 Constitution) causes no property tax collection on the first \$75,000 of a home's value thus removing a significant amount of potential revenue. In 1985, the homestead exemption removed \$3.9 billion in assessments from the tax rolls (Hildreth, 1987) which translates to a 37% loss in local property taxes (LSU and CABL, 1987b). Furthermore, levies against the reduced base are constrained by laws requiring voter approval of all millages above certain general purpose levels. This practice encourages "special service" or "earmarked" levies.

Finally, administrative procedures also may contribute to the underutilization of the property tax. The lack of standardization and control of local assessment practices as well as the four-year appraisal interval are thought to be especially relevant [Public Affairs Research Council (PARC), 1986]. Evidence suggests, for instance, that assessment quality varies inversely with the average homestead exemption amount; i.e., when the dollar amount is high, the assessment ratio is likely to be low (Schilling, 1987). Moreover, four-year assessments require millage adjustment at each

quadrennial reappraisal, with roll-back and roll-forward procedures preventing changes in tax collections after values are equalized. Without annual reassessment, "the millage rollup is effective only every four years, with tax collections trailing inflation in the interim" (PARC, 1984, p.8).

Louisiana School Revenues

Schools are financed in Louisiana, as elsewhere, through a mixture of funds from three governmental levels. The percentage of funds from both the federal and state levels is higher in Louisiana than the national average.

Table 1-1 indicates the average percentages of federal, state, and local revenues for funding Louisiana public schools and compares them to the national average for selected years since 1969-70. The national average of federal funding has fluctuated only 2 to 3 percentage points over the last sixteen years, with a high of 9.2% in 1979-80 and a low in 1985-86 of 6.5 percent. The national state-level trend shows a continual increase in percentage of support, e.g., from 41% in 1960-70 to 50% in 1985-86. Moreover, federal levels appear to be re-establishing themselves at levels near those of the late 1960s following significant fluctuations during the 1970s.

TABLE 1-1

GOVERNMENTAL SOURCES OF FUNDS FOR FINANCING
ELEMENTARY AND SECONDARY PUBLIC SCHOOLS,
COMPARING LOUISIANA TO THE NATIONAL AVERAGE,
BY PERCENT, FOR SELECTED YEARS, 1969-70 TO 1985-86

SOURCE	1969-70		1974-75		1979-80		1985-86	
	LA	NAT AVG	LA	NAT AVG	LA	NAT AVG	LA	NAT AV
FED	11.9	7.2	17.4	7.8	14.8	9.2	10.8	6.5
STATE	56.4	40.9	54.2	43.8	54.4	48.9	53.6	49.8
LOCAL	31.7	51.8	28.4	48.6	30.8	42.0	35.6	43.8

Sources: National Education Association. Estimates of School Statistics, 1986-87; Advisory Commission on Intergovernmental Affairs. Significant Features of Fiscal Federalism, M-113, 1977 and M-151, 1987.

Federal support for public education has fluctuated over time in Louisiana. Presently at the same level of support as in 1969-70 (1.6% of the national average), the federal level of support exceeded twice the national average in 1974-75.

Since 1980, when Louisiana school districts received 15% of their revenues from federal sources, 54% from the state and 31% from local sources, there has been a significant shift toward greater local support. By 1985-86, the federal contribution had dropped to 11%, the state contribution remained nearly the same (53.6%) while the local contributions rose five percentage points to 36 percent. Both the federal reduction in funds, which accompanied federal decentralization policy in the early 1980s, and Louisiana's restricted ability to generate state funds have contributed to the increased reliance on local funding of school district operations.

Researchers have generally recognized that

if the superior resources of the state government were not used to even out the differences in wealth among local districts in the state, then students in the poorer districts would be condemned to levels of public service greatly inferior to the levels of public service offered in the more affluent districts (Hickrod and Hubbard, 1978, p. 414).

The high level of state support for education, possible in the past due to Louisiana's great reliance on mineral

revenues, has gradually eroded. Surpluses have been depleted, and the state has had difficulty in maintaining previous levels of support as evidenced by less than full funding of the equalization formula for the last four years.

Nationally, nearly all local school revenue is derived from the local property tax. Louisiana school districts, mirroring other local governmental units, rely sparingly on the property tax base and instead draw local funds from the sales tax base. Louisiana, in fact, is the only state to generate a greater percentage of its school support through the sales tax than through the property tax (Mikesell, 1984). Since 1964, legislative mandates have provided for local use of sales tax revenue for the support of schools. Article VI, Section 29, of the 1974 Louisiana Constitution authorizes school districts to utilize the sales tax base for local funds (subject to ceiling limitations when combined with other municipal services, presently 4%), and districts more recently have been inclined to rely on sales tax capacity. By 1986, 65 school districts drew some of their support from the sales tax base (Geske and LaCost, 1988).

Several local parish districts receive revenue from royalties, rents and land leases of school lands rich in

oil, natural gas, timber and other natural resources. Much of this revenue was generated from property known as 16th section lands. This property, originally deeded to the state by the federal government was, in many cases, passed on to local districts around the turn of the century. In addition, several parish districts own additional acreage. Since 1975, RLL revenue has totally supplemented the state dollars allocated through the funding formula. Act 619 of 1975 stipulated that no revenue from 16th section lands was to be included in the MFP in determination of local support. Prior to 1975, 50% of that revenue was charged against the school district in the allocation formula (Gremillion, 1976).

The data in Table 1-2 illustrate the relative reliance of Louisiana school districts on different revenue sources for selected years. Also displayed in the table are the percentages, for selected years, for local school districts nationwide. The data indicate that local district reliance on property tax revenue for the late 1970s to mid 1980s averaged between 62% and 65%, whereas Louisiana's reliance on the property tax showed a continual decline--from 90% in 1964-65 to 43% in 1974-75, and finally to 33% in 1986-87.⁴

The growth in the percentage of revenues derived from the sales tax capacity is especially important,

TABLE 1-2

SOURCES OF LOCAL REVENUE FOR FINANCING
LOUISIANA ELEMENTARY AND SECONDARY PUBLIC SCHOOLS,
BY PERCENT, FOR SELECTED YEARS, 1964-65 TO 1985-86,
AS COMPARED TO THE NATIONAL AVERAGE,
FOR SELECTED YEARS, 1976-77 TO 1984-85

SOURCE	LOUISIANA					NATIONAL AVERAGE*		
	1964-65	1969-70	1974-75	1979-80	1985-86	1976-77	1981-82	1984-85
PROP TX	89.86	59.88	43.24	32.31	33.43	64.14	61.03	62.09
SALES TX	3.18	33.72	39.88	52.41	46.99	**1.67	2.01	1.75
RENTS, LEASES	3.91	2.66	2.61	2.12	1.64	----	----	----
OTHER SOURCES	3.05	3.74	14.27	13.16	17.94	34.19	36.96	35.35

* Includes both dependent and independent school districts.

** National averages for this category include all other taxes at the local level.

Sources: Louisiana Department of Education. Statistical and Financial Reports, 1964-65, 1969-70, 1974-75. Bureau of Management Information Systems, 1979-80 1985-86.

U.S. Department of Commerce. Finances of Public School Systems, GF85-No.10, 1977-78, 1982-83, and 1984-85, Table 1.

Actual percentages are a result of author's calculations.

e.g., 3% the first year of legislative approval (1965) to nearly 50% in 1985-86. The data further indicate an even greater sales tax reliance during the latter part of the 1970s, before the economic restrictions of the early 1980s. Although nationally there was some reliance on revenue generated through taxing other bases at the local level (i.e., income), the percentage was small. No comparison between Louisiana and the nation as a whole was made concerning rents, leases, and "other source" revenue, since the composition of the categories was not comparable.

Allocation of School Revenues

Louisiana's finance formula is adapted from the Minimum Foundation Program (MFP) model. Developed by Strayer and Haig in the 1920s and subsequently refined by Paul Mort, the MFP is considered the most popular of the finance plans and is used in about one-half of the states.

The basic principles associated with the MFP require the establishment of minimum local property tax rates and minimum spending levels for each local school district in the state, yet permit each district to exceed the minimum tax rate if it chooses. Ideally, this model establishes a minimum dollar level of support for pupils, yet caters to local control. The state's

responsibility is to establish and maintain an adequate minimum level of support.

Greater expenditure equalization is obtained through linking the allocation of state funds to local districts' wealth, with poorer districts getting more state funds per pupil than the wealthy districts. Imposing a minimum property tax rate, or millage rate, requires each local district to make a tax contribution toward the education of its own children. This millage rate, set by the state, is variously called the required minimum local tax rate or the "chargeback" to the local school district (Jones, 1985).

On the one hand, the policy of setting minimums while permitting localities to exceed these minimums to unchecked levels is considered an advantage of an MFP. The state's fiscal participation in school finance is thus limited, and wide local latitude in taxing and spending above the minimum is provided. On the other hand, unbridled local latitude above the minimum contributes to disparities in both school taxation and expenditures. Furthermore, a state's failure to raise the specified minimum spending level sufficiently may cause foundation levels to become unreasonably low thereby contributing to greater disparity (Jones, 1985).

To counteract the disadvantages and to decrease the degree of disparity among school districts, adaptations of the basic MFP model have included placing ceilings on local tax rates and/or increasing the state's relative contribution. A narrow gap between maximum and minimum tax rates, for instance, would decrease the disparity among districts, as would an adequate contribution from the state's coffers. However, if states go too far, such steps would interfere with the basic principles of the foundation plan--that is, a minimum support level coupled with the freedom to increase local funding. MFP advocates suggest maintaining a "dynamic tension" between the basics of the plan and any adaptations (Jones, 1985).

The Louisiana Minimum Foundation Program

The 1974 Constitution of the State of Louisiana provides for the funding of public schools through an equalization plan called a Minimum Foundation Program (MFP). Specifically, Article VIII, Section 13 (B) declares:

The legislature shall appropriate funds sufficient to insure a minimum foundation program of education in all public elementary and secondary schools. The funds appropriated shall be equitably allocated to the parish and city school systems according to formulas adopted by the State Board of Elementary and Secondary Education and approved by the legislature prior to making the appropriation.

The structure of the Louisiana financial aid formula is based on two components: an annual determination of cost and a formula for determining the mix of intergovernmental funds supplied for the support of schools.

Needs and costs for each local district are determined through a series of steps that ultimately result in a foundation program level for each school district. Pupil-teacher ratios on a school-by-school basis, including special allotments for kindergarten and special education, are used to quantify the needs and costs for each local school system. The summation of these costs determines the foundation level for the program.

The Louisiana MFP utilizes taxable assessed property valuation per ADM as a measure of local financial ability to support schools. Taxable assessed property valuation per pupil is defined as the assessed property valuation less the homestead exemption divided by the average daily membership (ADM) in each parish. The required local support portion is determined at the state level. The state calculates local requirements by applying a (assumed) mandated 5.5 mill rate against the taxable assessed property valuation of the district. This amount is then subtracted from the total cost of

the foundation program, or "charged back" to the local district. The remainder, termed the "difference necessary to equalize," represents the revenue required of the state to meet the minimum foundation level determined for each district. Figure 1.1 provides an illustration. The difference between Component I and Component II is the support required from the state (Component III).

Compounding the difficulty of implementing the MFP are issues concerning the (a) equitable appropriation of funds, (b) discretionary powers granted the State Board of Elementary and Secondary Education, and (c) the annual legislative approval of the appropriation. The legislature, for example, can determine a less than full degree of funding in which case the state contribution is reduced. Furthermore, adjustments either due or expected from the local level are added and/or subtracted after the MFP allocation has been computed. In addition, the practice of assessing property every four years allows for millage "roll forwards" and "rollbacks". These adjustments, especially if employed sporadically and/or by only a few districts, result in possibly further inequities (PARC, 1984). Figure 1.2 represents the distribution of state and local revenues under the MFP coupled with local discretionary funds

I	-	II	=	III
MFP Cost	-	Required Local Effort	=	State Share

Figure 1.1. Conceptualization of components of the Minimum Foundation Program in Louisiana.

I	-	II	=	III	+	IV
MFP Cost	-	Required Local Effort	=	State Share	+	-additional local effort
				(less a percentage if not fully funded)		-sales tax revenue
						-royalties, rents and leases from school-owned lands
						-revenue sharing funds

Figure 1.2. Components of the Louisiana Minimum Foundation Program and available local discretionary funds.

available in varying degrees to local districts. Component IV represents areas of revenue available to local districts, yet not included in the MFP.

In using the taxable assessed property valuation per pupil as a measure of the local fiscal capacity, the state financial plan bypasses the revenue generated by local sales tax and that generated from rents, leases and royalties on school owned land. In effect, this allows for the use of discretionary dollars in certain parish districts. The ability-to-pay through the use the sales tax capacity, and the effort put forth at each local level, of course varies, as does the revenue from rental/land lease sources. Nevertheless, both sources of revenue may be significant in determining local fiscal capacity and may thus impact on both fiscal neutrality and expenditure disparity. In other words, if local funding of schools is provided through sources not considered in the state allocation formula, greater levels of inequality in school spending may occur.

Significance of the Study

Several factors suggest that the equity question be examined in Louisiana. Amendments and statutes have altered the implementation of the MFP since 1977-78, the first full year of implementation as described in the 1974 Constitution. Of specific interest is Act 619

(1975) which revoked the inclusion of local revenues from royalties and land leases in the MFP formula for determining local support (Gremillion, 1976). For example, in 1981-82, seven parish school systems received over 10% of local revenue from RLL revenue. Of these, four received over 20% and one district received nearly 50 percent. Non-inclusion of this local revenue source in the MFP has likely distorted significantly the equality in the distribution of per-pupil revenue. This factor, alone or in combination with others, may have significantly affected the degree of equity among students in the state.

In addition, there presently exist several indicators which point to the need for a current fiscal equity study in regard to the state's program and procedure for determining funding levels. These include:

- 1) The current interest in widening tax bases, including arguments both for and against the elimination of the homestead exemption. Proponents view such a move as a viable means of generating not only more dollars for schools, but also more stable dollars. Opponents see it as either a regressive trend or an additional means of extracting dollars from already overburdened taxpayers. Such a move, of course, prompts heated discussions of local control issues.

2) A 1983 State Department of Education Task Force recommendation to adopt an alternative funding formula. The Task Force recommended that a District Power Equalizing Program replace the Minimum Foundation Program.

3) Litigation regarding the ability of the Minimum Foundation Program to provide equitable funding to students (Scarnato et al & Orleans Par. Sch. Brd. v. Parker et al, 1976, and Livingston, La. Sch. Bd. v. La. St. Bd. of Educ. 1987). Although both have been settled in favor of the state, the interest in equality of funding remains high.

With regard to the design of the study, this researcher has chosen to conduct a longitudinal investigation for the following reasons. Because Louisiana has incurred a volatile economy since 1978, local governments, including school districts, have had to continually adjust to fluctuating revenues from mineral sources, increased reliance on sales tax capacity and reduction in both state and federal funding. A longitudinal assessment encompassing these volatile years may best capture the trends and/or fluctuations in the relationship between revenue and local capacity as well as the degree of disparity in distribution of revenue per pupil, thereby providing a more accurate picture of two dimensions of equitable funding. Furthermore, Hickrod and his associates (1979) recommend greater use of longitudinal analysis in assessing equity issues.

Endnotes

¹ For a graphic presentation of basic models and accompanying description, see Jones, 1985; for a comprehensive discussion and illustration of adaptations, see Geske and Cohn, forthcoming.

² The use of fiscal neutrality in this context is not to be confused with the economic principle of fiscal neutrality in which the revenue and expenditure dimensions of taxation have no impact on private sector behavior. For a comprehensive discussion of fiscal neutrality as an economic principle, see Herber, 1983, pp. 96-99.

³ A detailed analysis of wealth-related cases, especially those since 1978, is provided by LaMorte and Williams, 1985.

⁴ The national data includes both dependent and independent school districts. Dependent school districts receive a portion of their local revenue from the municipal government which in turn receives its major portion from property taxes. This municipal revenue is not included in these percentages thus the actual national percentage of local school revenue derived from property tax is likely to be much higher.

CHAPTER II

REVIEW OF RELATED LITERATURE

The purpose of this chapter is to provide a review of selected literature relevant to this study. The literature is partitioned into three areas: (a) that which pertains to equity, including conceptual frameworks and evaluations, (b) that which pertains to fiscal neutrality, including a conceptual model and alternative measures, and (c) that which pertains to local sources of school revenue.

General Equity Frameworks and Studies

"Equity refers to the notion of distributive justice and fairness in educational systems" (Geske, 1982, p. 334). That which is just or fair in educational finance requires personal judgement. As a value, equity is limited in use unless empirically and quantitatively defined (Hickrod, Chaudhari, Hubbard and Lee, 1982). At least two frameworks for defining and measuring equity have developed in tandem with the equity studies of the 1970s. Alexander's (1982) equity hierarchy centers on students, whereas a framework developed by Berne and Stiefel (1984) is adaptable to either students or taxpayers.

Alexander's Equity Hierarchy

Alexander's (1982) hierarchal framework is useful for evaluating continual development of school finance formulas (Geske, 1983). Stemming from philosophical and legal roots, four major concepts--commutation, equal distribution, restitution and positivism--directed at child equity are arranged in ascending order, with the highest level requiring the greatest degree of state support.

Level one, or commutation, assumes that equity exists when each individual decides for him/herself the level of benefits to be enjoyed. No corrective governmental action is required; thus, there is little intergovernmental aid.

Equal distribution, or horizontal equity, exists when intergovernmental aid remedies disparities by providing an equal amount of dollars for a particular service.

Restitution enlarges the equity concept by requiring increased state involvement to correct undesirable conditions brought about by government action (Geske, 1983). Equity is served when government can insure that all individuals have had equal opportunity and when legislation is not responsible for determining winners and losers.

Positivism requires the state to resolve any disparity in benefits among individuals regardless of the cause. This uppermost level equity is associated with Rawls' conceptualization of redistribution to equalize or even increase the advantage of the least favored.

Berne and Stiefel's Framework

A second framework developed by Berne and Stiefel (1984) is especially useful for evaluating equity. Limitations are placed on an equity assessment through the choice of responses to four specific questions. Decisions concerning 1) which group, 2) what object, 3) which principle and 4) which summary statistic(s) significantly narrow the concept of equity to be researched. A brief discussion of each question follows.

Equity for whom? Finance systems should provide equity to both pupils and taxpayers. The benefits of an education enhance the student's life and spill over to enhance the lives of those with whom he interacts. Taxpayers pay for services provided students, and the burden, if strongly inequitable, can be rejected by those taxpayers.

What services or resources should be distributed?
The object of distribution depends upon the response to

question one. When students are the chosen group, three objects might be considered: (a) educational inputs, usually measured by revenues or expenditures; (b) educational outputs (e.g., the results of the schooling system as measured by achievement tests); and (c) pupil outcomes (e.g., the lifetime results of schooling such as income, status or profession). If taxpayers are the chosen group, two objects might be considered: (a) the tax burden of the individual as a percentage of his ability-to-pay, and (b) the benefits received from the taxpayer's taxes.

Which equity principle assesses fair distribution?

When students are the consideration, the following three principles apply: (a) "equal treatment of equals" in which all pupils are considered to be eligible for equal shares; (b) "unequal treatment of unequals" in which differences among pupils (e.g., handicapped, disadvantaged, bilingual) are recognized and eligibility for unequal shares is presumed; and (c) the "equal opportunity" principle in which concern for equal access and non-discrimination are combined.

The conceptual framework of equity principles for taxpayers is not yet well developed. On those occasions when the tax burden is the object, the principles of horizontal and vertical equity in regard to taxpayers'

ability to pay are most often considered. When "benefits received" is of concern, the "equal yield for equal effort" principle is satisfied when "school districts that tax themselves at the same rate received equal amounts for each student" (Berne and Stiefel, 1984, p. 42). A second principle, similar but broader in concept, is satisfied when distribution of educational services is determined by taxpayer preference, rather than ability-to-pay. Methodological and conceptual issues need to be resolved concerning this principle.

How is equity to be measured? Numerous statistical procedures are available for measuring equity. Several univariate statistics, measuring the spread in the distribution, are available for assessing horizontal equity. Relationship statistics, including regressions and elasticity measures, assess equal opportunity. Vertical equity, the most difficult principle to measure, uses weighted dispersion measures and/or regression relationship measures. In most studies, more than one statistic is selected, in part because a particular statistic is often directly linked to the value emphasized and in part because multiple statistical procedures aid in comparing results across different studies.

Findings and Contributions from Equity Evaluations

Cohn and Geske (forthcoming) summarize the findings of recent evaluations, most of which grew out of the school finance reform movement of the 1970s. The criteria of revenue disparity among pupils was included in all evaluations, and most addressed the issue of wealth neutrality. This summary, presented in Appendix A, includes results from national, multi-state and single state assessments and represents studies which are both cross-sectional and longitudinal in nature.

In addition to assessments of equity, the evaluations expanded conceptual and methodological issues. General findings of the studies, although not unanimous, indicate little progress in alleviating disparity among students (Carroll and Park, 1983) and only modest success in increasing fiscal neutrality (Cohn and Geske, forthcoming). The following sections review results from major studies and list significant contributions made to school finance evaluation procedures (e.g., measurement, scope, standardization, etc).

Findings from Studies

Berne and Stiefel (1984) conclude, from their comprehensive analyses of the research through 1982, that equal treatment of equals improved through 1960, but did not maintain that trend through the 1960s and

1970s. Cohn and Geske (forthcoming) report that the reform efforts of the 1970s produced little shifting of resources from the more advantaged to the less advantaged students. A 1981 study (see McLoone, Golladay, and Sonnenberg in Appendix A) supports this summation. Those authors found, in examining data both among and within states, that expenditure inequality, on a national basis, was unchanged over a seven year period. In addition, no changes in expenditure patterns within states were identified (Cohn and Geske, forthcoming). In a five-state equity evaluation (California, Florida, Michigan, Kansas, and New Mexico), per-pupil revenue distributions among dichotomous groups (i.e., black/white, small/large, urban/non-urban) were found to be unaffected by reforms in the state revenue distribution plan (Carroll and Parks, 1983).

Researchers comparing three states over time reported that the greatest progress had been made in regard to the goal of unconditional fiscal neutrality, but considerable differences were evident from state to state (Hickrod, Chaudhari, Hubbard and Lundeen, 1980).

Nearly all individual state evaluations included assessments of fiscal neutrality and variation in revenue per pupil and were initiated in response to a reformulation of the state finance program. Currently,

these studies outnumber the multi-state studies. Researchers have cite complexity, cost, and the individual nature of state funding systems as factors inhibiting the application of the usual procedures to multi-state situations (Hickrod, Chaudhari, Hubbard and Lee, 1982). Moreover, these researchers report that the individual state studies have, for the most part, demonstrated less than satisfactory results (see Hickrod, Chaudhari and Hubbard, 1985; Cohn and Geske, forthcoming).

Of significant interest to this study are the single state studies which utilize data over a span of years. These studies allow for an assessment of the longitudinal effects of finance formulas. Hickrod and his associates at the Center for the Study of Educational Finance at Illinois State University are considered forerunners in this area, having assessed equity goals in Illinois since 1973. The longitudinal studies from Illinois indicate an initial increase in both fiscal neutrality and equal treatment of equals and a subsequent decrease in these equity dimensions from 1973 to 1986 (Hickrod et al., 1985).

In addition to Hickrod's analyses, each of two studies evaluating two different states over a four year period report that student equity had worsened. Goertz

(1983) reported that the New Jersey funding plan, even with increased state aid, was assessed as being more inequitable. In Pennsylvania, equality with respect to both disparity and wealth neutrality worsened after reform (Fowler and Frier, 1981). The Pennsylvania study's results concerning fiscal neutrality do vary depending on whether property valuations or income was used as the specification of local district capacity.

Contributions to Procedures

The early national studies made significant contributions to the advancement of evaluation procedures in educational finance. The President's Commission on School Finance (1972), using three measures of expenditure range ratios, was the first attempt to calculate expenditure disparity nationally. During the late 1960s and early 1970s, the National Educational Finance Project provided early analyses of all fifty state school finance programs and was the "first effort to compare state school finance programs in terms of relative resource equity across each state's pupil and taxpayer populations" (Johns and Magers, 1978, p.376). The lack of equivalent data in the early studies prompted the National Center for Education Statistics (NCES) to develop state profiles which encouraged the provision of more uniform collection of data, thereby

enabling assessments to be made among states (Cohn and Geske, forthcoming).

Brown et al. (1978) addressed the fiscal equity issues of 1) equal treatment of equals and 2) equal opportunity (i.e., the relationship between per-pupil expenditure and property wealth). Despite flaws in the study¹, the introduction of the coefficient of variation as a calculation provided a measure of the entire area of disparity, and, for the first time, a longitudinal comparison of two points in time. A 1979 Education Commission for the States (ECS) study utilized a greater number of measures to examine per-pupil revenue disparities and the property wealth-revenue relationship (Cohn and Geske, forthcoming).

The preceding information provides a skeletal sketch of the growing concern among researchers involving methodological issues, definitions and limitations.

Fiscal Neutrality and Capacity Measures

Additional sources of revenue at the local level have been considered capable of having a positive effect on reducing the relationship between expenditures per pupil and the local measure of wealth, or fiscal capacity. Harrison (1976) has illustrated the relationship between per-pupil expenditures and local capacity and the influence that additional sources of revenue

might have on that relationship. A brief description of the fiscal neutrality explanation developed by Harrison follows. It is then re-structured to illustrate the more recent emphasis on including additional sources of local revenue as measures of local fiscal capacity.

Fiscal Neutrality Illustration

Harrison (1976)'s diagrammatic representation is intended to illustrate how non-property taxes, among other sources of revenue, would decrease the relationship between the designated measure of fiscal capacity and expenditures per pupil. He used the traditional measure of wealth, assessed valuation of property per pupil. The diagram in Figure 2.1 represents the causal relationship between the measure of fiscal capacity (A) and expenditures per pupil (B). Holding all other factors constant, it predicts that increments in any one of the intervening variables (C), will reduce the relationship between A and B, thereby increasing fiscal neutrality.

However, if the diagram were restructured to support the position that local fiscal capacity should include major sources of local revenue, then the adaptation of Harrison's model, illustrated in Figure 2.2, is more representative. Non-property taxes in this instance now become a part of the local fiscal capacity.

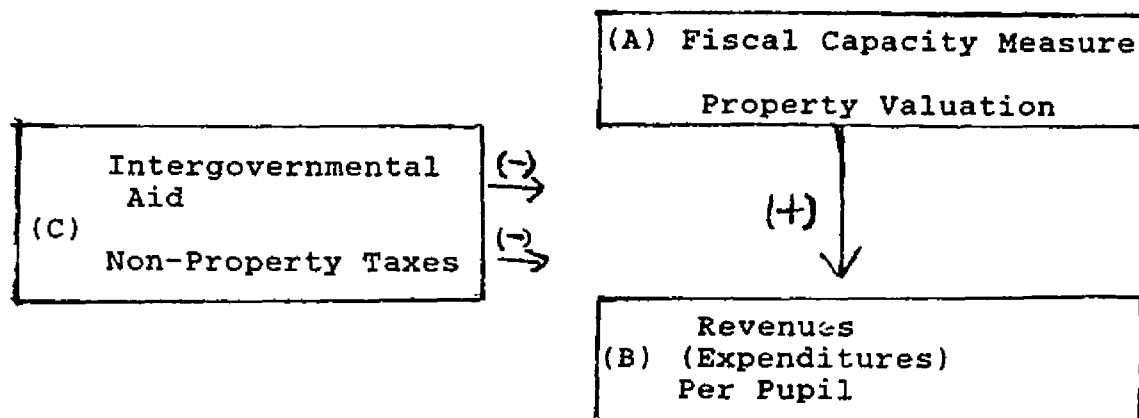


Figure 2.1 Representation of the Causal Relationship Between Fiscal Capacity and Expenditures Per Pupil

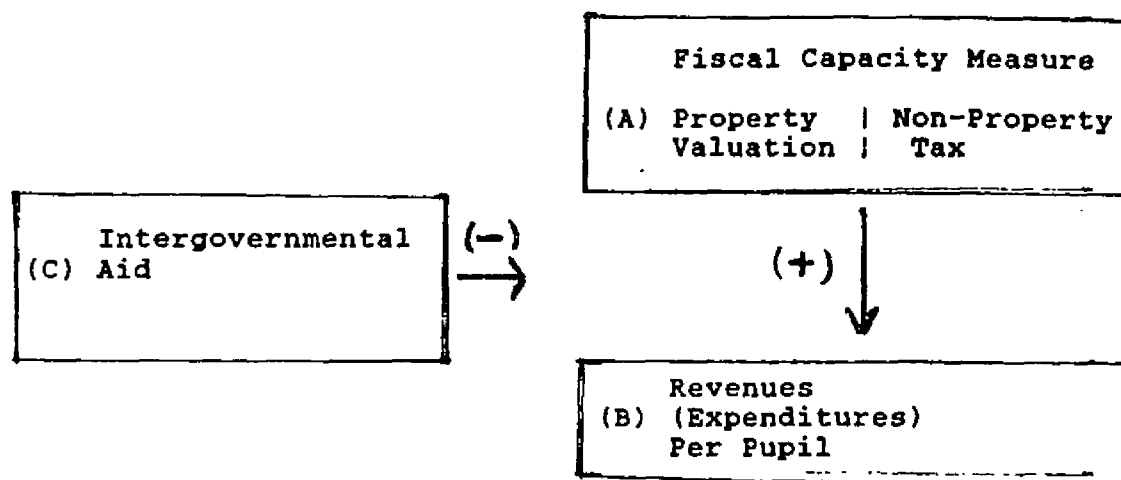


Figure 2.2. Alternative Representation of the Causal Relationship Which Captures Additional Local Revenues

By including this local source of revenue as a factor in section A, non-property taxes are no longer considered an intervening factor but are, instead, an additional causal factor that may likely increase the relationship between A and B. The intervening variables remaining in section C are left with the responsibility of lessening the relationship between local fiscal capacity and expenditures per pupil, i.e., equalizing expenditures per pupil within the state so that the child's education is not a function of his district, but of the state as a whole.

As non-property taxes actually become a factor in the fiscal capability of the local districts to support schools, local ability to support schools will increase. If measurement of ability-to-pay does not change, then the incongruence between ability and actuality may be exacerbated. State funds are meant to equalize revenues per pupil so that each student in the state is supported equally (at least for basic services). State funds are determined partly by the fiscal capacity of the local district. If non-property taxes are used, but not included as part of the measure of local ability-to-pay, the relationship between fiscal capacity and revenue per pupil is likely to grow. As local alternatives increase, measurement of local ability to support

education may have to be readjusted, expanded or changed. A portion of the school finance research of the late 1970s investigated alternative measures of fiscal capacity, and the results and progression of these studies follow.

Alternative Measures

The complexity of assessing fiscal neutrality has increased as researchers have become more aware of factors (eg. socio-economic status, regional cost differences) affecting the relationship between wealth of a district and expenditures per pupil. Per-pupil property valuation, the predominant revenue source for school districts, has traditionally been considered the sole measure of fiscal capacity. This assumption has come under scrutiny as a result of the reforms of the 1970s, resulting in investigations into the components which make up the fiscal capacity of a district (Adams and Odden, 1981).

Ladd (1975), for instance, analyzed composition of the wealth base of property valuation. She identified industrial, commercial and residential components of the property base and weighted them in relation to their impact on spending. Her findings suggest that the traditional measure of capacity (i.e., market value per

pupil) overstates fiscal capacity in low-income, high industrial areas and in high poverty communities.

Feldstein (1975) employed an extensive set of factors affecting expenditures (i.e., per cent resident property, state and federal aid, income, measures of public and private enrollments, and pupil growth rate). These factors statistically adjusted the local property wealth measure, making it more precise. Feldstein (1975) was one of the first to include income as a component of local fiscal capacity. This action prompted other researchers to question the appropriateness of using only property to measure the capacity of a local school district to support education. Odden (1977), for example, reasoned that income per capita or income per pupil could serve as an alternative because in most states, the income base is the logical inclusion of an alternative or additional measure of the fiscal capacity of the district to support its schools.

The research concerned with designating income as a local wealth, or capacity, measure is included here for two reasons. First, the current body of empirical knowledge related to alternative wealth measures is based on income as the capacity factor. Second, the ongoing and reactive responses of school finance researchers to the emergence of increasingly more complex

issues related to measuring and/or combining capacities is illustrated in this literature.

Early research concerning alternative tax bases as measures of fiscal capacity focused on income per capita or income per pupil as the alternative to property tax valuation per pupil. Hickrod and his associates, for example, report conflicting results when assessing the relationship between expenditure per pupil and fiscal capacity, first when defined traditionally as property valuation per pupil, and secondly, when defined as income per pupil.

A major consideration which evolved from early investigations of alternative measures of wealth concerned procedural issues related to combining factors (Adams and Odden, 1981). The majority of results indicated that factors should be combined multiplicatively (e.g., the 1975 studies of both Ladd and Feldstein), although the results from a few studies suggested the use of an additive method that included weighting the current income measure (cited in Adams and Odden, 1981).

Proposals advocating the use of ratios to combine local tax bases were then explored. Thornton (1981) directed a major effort toward the determination of a satisfactory method for deciding ratios of compound

bases. He suggested that the partial correlation of income per pupil and per-pupil property valuation with expenditure per pupil be the basis for deciding how to include income in a school formula. In concurring, Hickrod et al. (1982) suggested that an exploration of the method might provide a general guideline as to what might eventually be allocated based upon income versus property valuation.

Some research surrounding the use of income as an alternative specification of local fiscal capacity evolved from actual assessments of state funding systems. For instance, state studies in Missouri, Rhode Island, Connecticut, Maryland, Pennsylvania and Kansas emerged from the reform efforts directed at including income in the state's financial program as a measure of local ability-to-pay (Adams and Odden, 1981).

The unique formula of New York state was of particular interest (cited in Hickrod et al, 1982). Income was introduced in its own special allocation formula and no attempt was made to change the basic definition of district wealth in the general aid formula, which remains property valuation per student. Hickrod et al. (1982) determined this methodology to be practical, if not "theoretically elegant" (since no common measurement of district wealth was developed).

The separate introduction of income allowed the New York legislature to clearly indicate specific allocations related to the income and property assessment bases.

The alternatives considered as measures of local wealth, or fiscal capacity, have logically extended beyond the income base. Hickrod (1985) stated, for example, that the measure of wealth per pupil could be property valuations, or family income, or "some mixture of the two, or indeed, something else" (p. 14). Other researchers have suggested that the specific tax bases to which local districts have legal access for generating revenue be considered in determining the fiscal capacity of the local district (Johns, 1977; Johns, Morphet and Alexander, 1983). Mikesell (1984), in fact, advocated indices combining property with other bases (i.e., income, sales) as a more complete approximation of the fiscal capacity of an individual district.

At least one researcher has assessed the fiscal neutrality of a state in which both income and sales tax receipts were an actual part of the measure of local ability to pay for schools. Jones (1984), in an unpublished disseration, compared fiscal neutrality results in Virginia, using the traditional local measure of property valuation (in place before reforms established alternative measures for the formula) and the

Virginia Local Composite Index as measures of fiscal capacity. This index included true property valuation, personal income and taxable retail sales. Results with the index indicated a "marginal increasing dependence of school revenues on local fiscal capacity" (p. 127) while relatively little difference over time was shown when the traditional wealth measure was applied.

The single or multiple specifications of local capacity used by a state in its development of a funding formula are not necessarily the source, or sources, employed by local districts in their efforts to raise public school revenue. When reviewing the literature surrounding alternative capacity specifications, it is important to remain cognizant of this distinction between local use of non-property tax revenue as an actual revenue source (i.e., sales receipts, income tax, mineral source revenue) and the states' use of non-property tax bases as a measure of ability-to-pay (i.e., the basis for determining local effort or chargeback in distribution formulas).

Data from the late 1970s provides a clarifying example. Of sixteen states actually reporting non-property tax revenue (i.e., income) as a local source of support for schools (Mikesell, 1984), only three (Maryland, Connecticut and Rhode Island) utilized income

as a specification of ability-to-pay in finance formulas (ECS, 1978). Local districts in two other states, (Missouri and Kansas) received no local tax revenue from non-property bases, but income was used as a specification of local ability to support schools in the state formula (See Mikesell, 1984, for discussion).

Sources of Local Revenue

Property taxes have provided most of the revenues for financing local schools. Local school districts, in attempting to finance new programs and schools, have sought alternatives to this single base. Arguments against increasing the use of the property tax have been based on concern for equity, economic growth, administration difficulties, and disparities in the base among school districts (Mikesell, 1984).

School finance researchers generally agree that increased intergovernmental aid reduces horizontal equity problems (see, for example, Hickrod et al. 1982, and the discussion in Mikesell, 1984). Although increased intergovernmental aid has been suggested as one alternative source of school revenue (Harrison, 1976; Mikesell, 1984), the present constriction of state and federal funds is not likely to allow additional revenue to flow to districts.

Mikesell (1984) has examined the use of nonproperty tax sources as alternatives to funding schools. He notes that Kentucky, Pennsylvania, and Louisiana report substantial portions of local school district tax revenue from nonproperty taxes (15.5%, 22.26%, and 53.49% of total local taxes in 1976-77, respectively), while the latter two have the "greatest aggregate reliance on school district nonproperty taxes" (p. 471). Mikesell's assessment of the degree of divergence from equality for the property tax and the non-property tax in both Pennsylvania and Louisiana resulted in two significant findings. When both taxes and inter-governmental assistance were combined, the disparity in expenditure per pupil was "far less than for either tax base alone" (p. 473). When a comparison was made between the disparity evidence associated with non-property tax revenue versus the disparity results associated with property tax revenue, greater ambiguity was indicated.

Louisiana is unique in that local districts raise more school revenue through the sales tax than through the property tax base (see Table 1-2). Louisiana's state equalization formula, however, does not take into consideration the local school revenue generated through use of the sales tax when computing the local contribu-

tion to the MFP. Therefore, to the degree that local districts rely on the sales tax and not on the property tax, the designated capacity measure used in the MFP does not reflect the fiscal capacity of the local district.

In 1980, a study done in Louisiana by Alexander and his associates suggested that continued reliance on the sales tax would likely have a disequalizing effect on revenues per pupil. Furthermore, the relationship between revenue per pupil and local wealth, if wealth included both property tax valuation and the sales tax capacity, would become more disparate, i.e., the relationship between local fiscal capacity and revenue per pupil would intensify. The researchers concluded that sales revenue should be considered in the state definition of local fiscal capacity.

Summary

The purpose of this chapter has been to review literature pertaining 1) to the general concepts of equity and related empirical studies, 2) to the specific concept of fiscal neutrality and research associated with alternative specifications of fiscal capacity, and 3) to inquiries concerning alternative sources of local support for schools.

Endnotes

¹For a more detailed discussion see Guthrie, 1980;
also Johns and Magers, 1978.

CHAPTER III

CONCEPTUAL FRAMEWORK AND METHODOLOGY

Conceptual Framework

Berne and Stiefel's (1984) framework for assessing equity in state public school finance systems guided this investigation. This framework offered alternative conceptions of equity based on responses to each of four questions. These questions were examined in detail in Chapter II. For this study, Louisiana's public school finance system was evaluated in terms of equity for students, as opposed to equity for taxpayers.

Table 3-1 summarizes the framework and presents the relevant choices guiding this study. The input factor of adjusted state-local revenues per pupil was the object of fair distribution. The two principles used to determine fair distribution included (a) equalization of opportunity and (b) equal treatment of equals. Distributions of school revenues were examined for school years 1977-78, 1979-80, 1981-82, 1983-84, and 1985-86. The year 1977-78 was the first year of full implementation of the Minimum Foundation Program in Louisiana as described in the 1974 Constitution, and 1985-86 was the last year for which data were available. These revenue

TABLE 3-1

**Berne-Stiefel Conceptual Framework
For Organizing Alternative School
Finance Concepts and Choices**

Questions Which Pinpoint Equity	Alternatives	Choice	Defined as
Who makes up the group for which school finance systems should be equitable?	-Students -Taxpayers	Students	Pupils in Average Daily Membership(ADM)
What is the <u>object</u> to be fairly distributed?	-Inputs -Outputs -Outcomes	Inputs	Revenues Per Pupil
What principles are used to determine the fair distribution?	-Equal Opportunity -Equal Treatment of Equals -Unequal Treatment of Unequals	Equal Opportunity Equal Treatment of Equals	Fiscal Neutrality Disparity in Revenues Per Pupil
What quantitative mea- sures are used to assess the degree of equity?	-Relationship Statistics -Univariate Dispersion Statistics	Fiscal Neutrality: Disparity in Revenues Per Pupil:	-Wealth-weighted Gini coefficient -Regression slope -Elasticity coefficient -Coefficient of Variation -McLoone Index -Federal Range Ratio

Source: Adapted from Berne and Stiefel. (1964), p. 9.

distributions were explored quantitatively by using selected statistical measures which are described in detail in the methodology section.

The principle of "equal opportunity" was of primary importance in this investigation. It states that there

"should not be differences according to characteristics that are considered illegitimate, such as property wealth per pupil, . . . [or] fiscal capacity. . . . For example, this principle would require that there be no relationship between expenditures, resources, programs, outcomes, and per-pupil wealth or fiscal capacity." (Berne and Stiefel, 1984, p.17).

This principle was represented by the standard of fiscal neutrality which specifies that local fiscal capacity and revenue per pupil should not be related.

For this investigation, local fiscal capacity was alternately specified by three definitions. The first specification, taxable assessed property valuation per ADM, was defined as the total assessed value of property less exempted property divided by the number of students in ADM in each district. The second specification, sales tax capacity per ADM, was derived from dividing district sales tax revenue by the tax rate applied in each school district, and then dividing by district ADM.¹ The third specification of local fiscal capacity was determined by summing district taxable assessed property valuation and sales tax capacity (as calculated

in the second definition) before dividing by district ADM.

Changes in the relationship between each of the three specifications and revenue per ADM provided an assessment of whether the state's equal opportunity increased, decreased or remained the same during the nine-year period of time this study examined.

The second principle of equal treatment of equals states that students who are similarly situated should receive equal shares of any object. For purposes of this study it was assumed that a student's basic education would be funded before revenue was allocated for the special needs of students. Thus, only revenue expended for basic education was subject to measurement. The principle of equal treatment of equals was represented by the degree of disparity in per-pupil revenue. The state's school finance system moved closer to or further from equality as the disparity in per-pupil revenue either decreased or increased.

Basic revenue (i.e., adjusted state-local revenue) was defined as the sum of (a) local revenue intended for the basic education of public K-12 students enrolled for the academic year, (b) state non-categorical revenue, and (c) federal Impact Aid revenue (PL 81-874). Specifically excluded were all other federal revenues, state

categorical revenues (e.g., aid to the disadvantaged, vocational education and special education, interest on school improvement funds and revenue for post K-12 programs), and local targeted revenue (i.e., summer tuition and support for community programs) as well as state and local revenues for capital outlay and debt service.² District basic revenue, divided by district ADM, comprised the variable per-pupil revenue.

Methodology

The study was guided by the following research questions.

- 1) Has fiscal neutrality changed for alternate years from 1977-78 through 1985-86, when the fiscal capacity of a district is defined as taxable assessed property valuation per ADM, and, if so, in what direction?
- 2) Has fiscal neutrality changed for alternate years from 1977-78 through 1985-86, when the fiscal capacity of a school district is defined as sales tax capacity per ADM, and, if so, in what direction?
- 3) Has fiscal neutrality changed for alternate years from 1977-78 through 1985-86, when the fiscal capacity of a school district is defined as combined taxable assessed property valuation per ADM and sales tax capacity per ADM, and, if so, in what direction?
- 4) Has disparity in revenue per ADM changed for selected years from 1977-78 through 1985-86, and, if so, in what direction?

Explanations for the two equity dimensions, (a) fiscal neutrality and (b) degree of disparity in

revenues per pupil, and accompanying limitations and operationalizations follow.

Dimension One: Fiscal Neutrality

Two definitions of fiscal neutrality have emerged as a result of the equity studies. The first, "unconditional" fiscal neutrality, is concerned only with the relationship between revenues and fiscal capacity of a school district and ignores pertinent mediating variables, such as tax rates and district need. The second, "conditional" fiscal neutrality, is more comprehensive in that an attempt is made to control for, or parcel out, the effects of factors such as tax rates. The former definition, the more widely-used of the two, is the appropriate choice for this inquiry since the degree of neutrality between revenue per pupil and local fiscal capacity was investigated without adjusting for the impact of local tax rates.

The equity dimension of fiscal neutrality was measured by three relationship statistics. Two of the measures, the simple slope and the simple elasticity, were based on simple regression analysis in which per-pupil capacity and per-pupil revenue are the independent and dependent variables, respectively. First, the slope of the regression line was calculated. Second, an elasticity, using the value of the slope in combination

with the mean values of the variables, was computed. A third measure was the computation of a Lorenz curve and accompanying "wealth-weighted" Gini coefficient.

Regression Slope

Fiscal neutrality can be measured through the use of a simple regression when a measure of magnitude is desired (Berne and Stiefel, 1984). In the school finance context, the slope in the regression equation is the actual indicator of magnitude of inequality.³ This statistic was calculated using the following formula for computing the "bivariate slope from the pupil-weighted bivariate regression" (Berne and Stiefel, 1984, p. 29):

$$b = \frac{\sum_{i=1}^N ADM_i (R_i - \bar{R}) (W_i - \bar{W})}{\sum_{i=1}^N ADM_i (W_i - \bar{W})^2},$$

where ADM_i is the average daily membership of the i th district, R_i is the per-pupil revenue, W_i is the per-pupil capacity, and \bar{R} and \bar{W} are the means of the per-pupil revenue and per-pupil capacity distributions, respectively. The closer the value of the slope is to zero, the closer the state's funding system is to being fiscally neutral. The slope, however, is subject to distortion if constant percentage changes occur in either of the variables. This is especially troublesome

in an inquiry over time. Berne and Stiefel (1984) recommend that additional measures be used to supplement the results obtained from using the regression slope.⁴

Elasticity Coefficient

An elasticity coefficient determines the percentage of change in the dependent variable (revenues per ADM) in relation to a 1 percent change in the independent variable (a fiscal capacity specification). Whereas the slope and elasticity both measure the magnitude of the relationship, the elasticity, unlike the slope, is not affected by distortions resulting from inflation or equal proportional changes in the independent variable (Berne and Stiefel, 1984).

Since the emphasis of this study was concerned with changes over time (in which inflation and growth in property values were factors), an elasticity (which is sensitive to change), based on each simple regression was used as an additional measure of neutrality between per-pupil revenue and fiscal capacity. The formula for the elasticity is

$$e = b \frac{\overline{W}_p}{\overline{R}_p} ,$$

where b equals the slope of the regression line, and \overline{W}_p and \overline{R}_p are the means (pupil unit of analysis) of per-pupil specified "wealth" values and per-pupil revenues

respectively (Berne and Steifel, 1984, p. 74). As the elasticity approaches 0, the relationship between per-pupil revenue and capacity exhibits greater neutrality.

Lorenz Curve and Gini Coefficient

Another approach to measuring fiscal neutrality involves the production of a mathematical index and an associated graph (the Lorenz curve)--both of which represent the relationship between per-pupil revenues and district per-pupil fiscal capacity (Hickrod et al., 1985). The index, termed the wealth-weighted Gini coefficient, is an adaptation of "an old tool in econometrics, the Gini coefficient (sometimes known as the coefficient of concentration)..." which was a univariate measure of per capita income inequality based on the Lorenz curve (Hickrod et al., 1987, p. 4).

Hickrod and his associates (1980) have modified the measure which, in its univariate form, is commonly used in school finance research to assess the inequality in per-pupil expenditures. Their adaptation, which allows for an assessment of the relationship between variables, requires an initial ranking of districts from low to high capacity before the calculation of deviations from equality of per-pupil distributions. These authors report that this adaptation allows the student to serve as the unit of analysis in the assessment of the

relationship between the state-local revenue and the capacity of local districts to support schools.

The following description of the procedure used for calculating both the Lorenz curve and the Gini coefficient was adapted from Hickrod et al. (1980). It represents the procedure followed in this study.

1. School districts were first ranked in ascending order upon the specified definition of fiscal capacity per ADM, and a cumulative percentage distribution of pupils from poorest district to richest district was formed.

2. A similar cumulative distribution for total revenues (adjusted state-local, or basic, revenue) was then formed.

3. A two-fold procedure was then observed. First, the two cumulative distributions (capacity and revenues) were plotted against each other. Figure 3.1 is an example of two possible results of such a plot. When local capacity is not a factor affecting revenues per ADM (i.e., the relationship is fiscally neutral), the X-Y plot of the two cumulative percentages, district capacity (weighted by pupils) and total revenues, is the diagonal line (OA). This line represents the "ideal" situation, in which a specified percent of total revenue (0%, 10%...100%) is received by an equal percent of

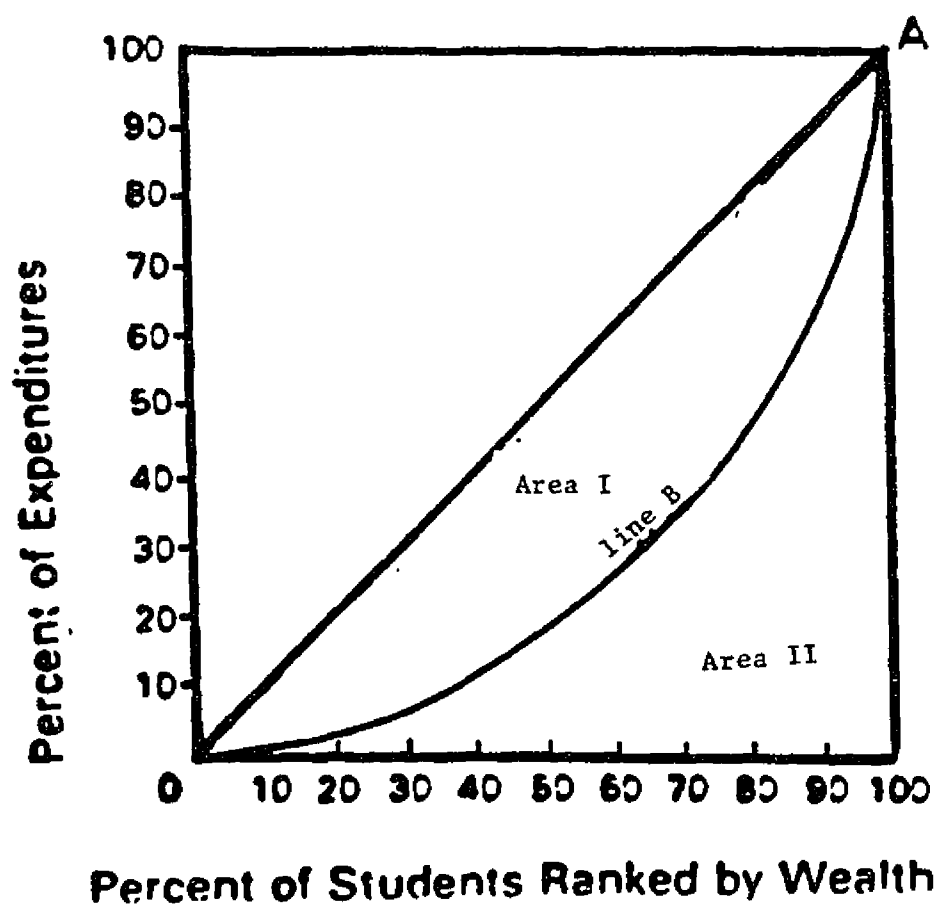


Figure 3.1 A Lorenz Curve representing inequality in school finance.

students (0%, 10%...100%). When, however, local capacity influences the distribution of revenue per pupil, the plotting of the cumulative percentages results in a curve (B), called the Lorenz curve, which deviates from the diagonal line (Cohn and Geske, forthcoming). Greater deviations result in less neutrality (i.e., greater inequality).

The second step produced a mathematical index (which is the more common of the two measures) representative of the degree of neutrality between per-pupil capacity and per-pupil revenue. The calculations are based on the following equation:

$$\text{Gini} = \frac{\text{Area I}}{\text{Area I} + \text{Area II}},$$

where I is the area between the ideal line (OA) and the plotted curve (B) and II is the area beneath the plotted curve (B). The resultant value, ranging from 0 to 1, is termed the wealth-weighted Gini coefficient. The smaller the value, the closer the state's public funding system is to unconditional fiscal neutrality. In relation to the Lorenz curve, the larger the value of the coefficient, the greater the departure of the curve from the 45 degree line representing the line of equal distribution. The complete formula for computing the Gini coefficient is provided in Appendix C.

Dimension Two: Degree of Disparity
in Revenues Per Pupil

Since the early 1970s the judiciary considered expenditures per pupil as "prima facie" evidence in determining equity in a state school finance system (Hickrod, Chaudhari, Hubbard and Lee, 1982, p. 1). Carroll and Park (1983), however, consider variations in access to revenues (rather than expenditures) as more crucial in evaluating the effect of a finance system. Furthermore, use of a revenue variable allows for the separate assessment of the state-local system, by excluding federal, state and local "targeted" aid that is an inherent component of current expenditure per ADM (Hickrod et al, 1982). For these reasons, the dispersion in the distribution of revenue per pupil (rather than expenditures per pupil), was the second equity criterion to be assessed.

The degree of disparity in revenue per pupil is measured by univariate statistics that capture the variability in the dispersion of revenues in a given distribution. Several different measures can be used to assess how far the distribution is from perfect equality, i.e., that point at which each student in the distribution would receive the same dollar amount (Berne and Stiefel, 1984). Three measures, the Coefficient of

Variation (CV), the Federal Range Ratio (FRR), and the McLoone Index (MI) were selected to assess the degree of disparity in revenue per pupil in this investigation. Each, with its accompanying rationale, is described below.

Coefficient of Variation (CV)

The coefficient of variation is considered sensitive to transfers from the upper level of the distribution to the lower level, "in that it would show more equality (decrease in value) if such a redistribution occurred" (Odden, Berne and Stiefel, 1979, p. 22). The CV is defined as the square root of the variance of per-pupil revenues (i.e., the standard deviation) divided by the mean per-pupil revenue. The CV is expressed algebraically as

$$CV = \frac{\sqrt{\sum_{i=1}^N ADM_i (\bar{R}_p - R_i)^2 / \sum_{i=1}^N ADM_i}}{\bar{R}_p},$$

where ADM_i is average daily membership for the i th district, R_i is revenue per pupil, and R_p is mean revenue per pupil (Berne and Stiefel, 1984, p. 56). The further the CV moves from 0, the more inequitable is the state school financing system (Berne and Stiefel, 1984).

Federal Range Ratio (FRR)

This measure was included since it is the designated measure used in federal school regulations which apply to the distribution of state financial aid. It is defined as the difference between the 95th and 5th percentiles of the distribution of revenue per pupil divided by the value at the 5th percentile. The upper and lower five percentiles are not included, since they could be construed as unrepresentative of the norm. It is calculated as follows:

$$FRR = (R_{95} - R_5) / R_5,$$

where R_{95} and R_5 are the 95th and 5th percentiles of the distribution (Berne and Stiefel, 1984, p. 66). As the value moves closer to 0, the distribution of revenue per pupil approaches equality.

McLoone Index (MI)

This measure focuses only on the school revenue distribution below the median. The rationale for its inclusion was that "bringing up low spending school divisions" should be at least the minimum goal of an equalization formula (McLoone, 1974). The McLoone Index can be thought of as a ratio of "actual" to "ideal". In other words, the MI is the ratio of actual per-pupil revenue generated below the median to the sum of per-

pupil revenue that would exist (the ideal) if each pupil below the median received the median per-pupil revenue.

The MI was calculated in the following manner:

$$MI = \left(\sum_{i=1}^J ADM_i R_i \right) / \left(Mdn_p \sum_{i=1}^J ADM_i \right) ,$$

where ADM_i is average daily membership for the i th district, R_i is per-pupil revenue, Mdn_p is the per-pupil revenue for the median student, and J is the district at the median level (Berne and Stiefel, 1984, p. 20). The values range from 0 to 1. This measure differs from the others in this study in that the closer the MI is to 1.0, the greater the equality for the pupils below the median.

Data Collection

The necessary school financial information for school years 1977-78, 1979-80, 1981-82, 1983-84 and 1985-86 was collected from the published annual reports of the Louisiana State Department of Education and from unpublished data submitted in individual district reports to the State Department. Data collected for each parish/city school system for the selected years included:

1. Average daily membership (ADM)
2. Taxable equalized assessed valuations of property per ADM
3. Property tax revenue
4. Sales tax revenue
5. Sales tax rates
6. State revenue less debt service, capital outlay, interest received from categorical revenue accounts, vocational education, special education, adult education, and transportation for vo-tec schools and colleges
7. Local revenue less debt service, capital outlay, interest received from categorical revenue accounts, summer school tuition, and charges for food preservation and canning centers
8. Revenue from Impact Aid (PL 81-874)⁵
9. Revenue from rents, royalties and land leases of school-owned property

The adjusted state-local revenue per ADM was calculated from items 1, 6, 7, 9 above. Sales tax capacity per ADM was calculated from items 1, 4 and 5 above.

Unit of Analysis

This study included the total population of students enrolled in sixty-six public school city/parish systems in Louisiana and was restricted to the provision of basic services for kindergarten through grade 12. District level data were analyzed by using a pupil unit

of analysis which weights each variable (i.e., revenue per ADM, property value per ADM, sales tax capacity per ADM, and combined capacity per ADM) by district ADM. This procedure was applied consistently to each of the formulas presented in the methodology section.⁶

Primary Data Analysis

The means, medians, standard deviations, and ranges for the four distributions, for five years, were first calculated. The previously described statistical measures were then computed for each of the equity dimensions, and the following analysis was developed and is reported in Chapter IV.

The equity dimension of fiscal neutrality was analyzed by monitoring the movement toward or away from a neutral relationship from 1977-78 to 1985-86 and reporting, by measure, the changes in unconditional fiscal neutrality for each of the three specifications of fiscal capacity. That is, the results obtained from measuring neutrality by the regression slope were reported for the three capacities. This was followed by reporting the results for the elasticity with respect to the three capacities and finally, the results for the Gini coefficient, again for the three capacities. Organizing the data in this manner allowed for com-

parison across capacities while holding the measure constant.

The equity dimension of revenue inequality was analyzed by assessing the tendency of the dispersion of per-pupil revenue to move either towards or away from equality through five assessment years from 1977-78 to 1985-86. The findings for the disparity in revenue per pupil were then combined with descriptive data (means, medians, ranges, etc.) in order to elucidate the inferences for equality associated with the results obtained from using the CV, the FRR, and the MI.

Secondary Data Analysis

Since access to local revenue not accounted for in a state's funding system may impact on inequality, a secondary analysis of the data, concerned with the interrelationship between local school district rental/land-lease (RLL) revenues, total local school district revenue, and combined state-local school revenue, was conducted.

Three sources of local revenue are available to several parishes in Louisiana. In addition to the property and sales tax capacities available to all parish/city districts, RLL revenue (i.e., royalties, rents and leases from school-owned, mineral-rich property), is a major local resource for at least three

parish districts, and a minor resource for several others.

Support for such an investigation is based on two assumptions. First, increased magnitude in RLL revenue (which is not included as a local source of support in the MFP) has been suggested as a possible contributor to fiscal inequality for the state (Alexander et al., 1980). On the other hand, a reduced dependence on this source by "high-reliance" districts may likely force those districts to increase dependency on sales tax capacity or the property base. Decreased fiscal neutrality may result from the increased dependency on the tax bases brought on by a decrease in local RLL revenue. This assessment was guided by the following research question.

For districts receiving 1% or more of state-local funds, (a) what is the interrelationship among RLL, property tax and sales tax revenue, and (b) have changes in reliance on RLL revenue effected reliance on property and sales tax bases?

The following limitations were imposed for this analysis. Only data from those districts receiving 1% or more of their total revenue in 1977-78, the first year of the study, or in 1981-82, a peak year for state-wide RLL revenue, were included in the analysis. Furthermore, revenues were not adjusted for debt service, capital outlay or categorical aid. That is,

all calculations were based on RLL revenue, total state revenue and total local revenue. In addition, all calculations were in current dollars.

For parishes meeting the 1% criterion, the percentage change in RLL revenue relative to total district revenue from 1977-78 to 1981-82 and from 1981-82 to 1985-86 was determined. Moreover, the interrelationship among revenues received from taxing property, taxing retail sales, and renting and/or leasing school-owned property at the local level was analyzed to determine what shifts, if any, occurred among the three local sources.

Summary

The purpose of this chapter was first to describe briefly the conceptual framework guiding this study. The methodology used to analyze the data was then presented. This included an explanation of two dimensions of student equity, their operationalizations, and the format for presenting the results of the analyses. Finally, the rationale supporting a secondary analysis and its format for presenting results was explained.

Endnotes

¹ Sales tax capacity is a surrogate sales tax base. Its calculation is determined by the equation Tax Base X Tax Rate = Tax Revenue. Since the school district sales tax revenue and applied sales tax rate are known values, the surrogate sales tax "base" for each school district (i) was determined by:

$$\text{Tax Base}_i = \frac{\text{Tax Revenues}_i}{\text{Tax Rate}_i}$$

For any given evaluation year, school districts not utilizing the sales and use tax were eliminated from the analysis. Five districts (Caldwell, Cameron, LaSalle, St. Helena, and Union) did not levy a sales and use tax in 1977-78. Four of these districts had initiated the sales tax by 1985-86, leaving Cameron as the only school district at the close of the study not employing the sales tax as a source of local support.

This researcher recognizes that there are some conceptual problems with using sales tax capacity as a base in the same manner that property valuation is used as a base. One major difference, of course, is that property valuation represents a stock of wealth, whereas sales revenue represents a flow of dollars. In addition, the values associated with property are known a priori, whereas only a post-assessment can provide a

"base" associated with retail sales. Nevertheless, both represent a capacity, or ability, to support schools at the local level and both are constitutionally approved sources of local support. As such, this researcher has conducted an initial investigation of the association between revenues and each of the capacities as part of the assessment of fiscal neutrality. Furthermore, the summation of the two bases, as a representation of a more comprehensive local capacity, is only one method of combining capacities. This initial effort, however, may precede the formulation of more precise combinations that represent local ability to support schools.

² Basic revenue was calculated as follows from unpublished data submitted to the state department:

- (1) Federal Impact Aid plus
- (2) Total state revenue, less the summation of
 - (a) Vocational Education (three categories)
 - (b) Adult Education (five categories)
 - (c) Special Education (that reported as part of the equalization formula plus that reported as part of restricted funds)
 - (d) College and Vo-Tech Transportation
 - (e) Interest from 1981 Education Improvement and Consolidation Act (ECIA)
 - (f) Debt Service/Building Fund

plus

- (3) Total local revenue, less the summation of
 - (g) Summer school tuition
 - (h) Charges for food preservation and canning centers
 - (i) Debt Service/Building Fund
 - (j) Interest on ECIA funds

³ Cohn (1984) summarized two different interpretations of fiscal neutrality. The first, advocated by Coons et al. (1970), implied a zero-order correlation between wealth (V) and per-pupil expenditures (E) and was represented by the equation:

$$E = a_1 + b_1 V + e_1,$$

where e_1 is the error term. The second interpretation, put forth by Feldstein (1975), suggested that fiscal neutrality meant that the effect of wealth on expenditures was zero in a constant elasticity logarithmic expression. It was represented by the equation

$$E = a_2 + b_2 \ln V + e_2,$$

where e_2 is the error term. In either equation, if a_1 , a_2 , b_1 , and b_2 are real numbers, perfect equality exists when b_1 or b_2 equals zero. Inequality worsens when b_1 or b_2 are increased.

⁴ The correlation coefficient is often used to measure the relationship between revenues and capacity. Within the Berne and Stiefel (1984) framework, the correlation represents "goodness-of-fit" rather than "magnitude" of relation which was the focus of this study. Nevertheless, because the correlation is the product of the regression slope times the ratio of standard deviations of the two variables, the data is corrected for distortions caused by changes in the raw

scores of the variables. Therefore, the correlations are provided in Appendix B for readers interested in this additional measure.

⁵ Funds from federal impact aid are intended to offset property tax revenues lost due to federal installations in taxing districts; such funds function as local revenue, hence their inclusion as local revenue.

⁶ In order to utilize a pupil unit of analysis, the state's school finance system is assumed to be a distribution of pupils (Berne and Stiefel, 1984, p.51). The implicit assumption is that all pupils in the district receive the average level of per-pupil state and local revenues (or per-pupil property valuation or per-pupil sales capacity). In order to do this, a district's state and local revenue per pupil is first computed by dividing the total state and local revenues in the district by the total number of pupils in the district. The district average for the variable per-pupil revenues is then assigned to each pupil. This weights each district by the number of pupils in the district. Although both district and pupil unit of analyses can be calculated, the pupil unit of analysis is the preferred among finance researchers. The pupil unit of analysis not only takes districts with greater

numbers of pupils into account more heavily than does the district unit of analysis, but the procedure for determining equality through the district unit of analysis is more easily calculated from the pupil unit of analysis than it would be if analyses were reversed (Berne and Steifel, 1984).

CHAPTER IV

ANALYSIS AND FINDINGS

The purpose of this chapter is to report the findings of the effect of the Louisiana public school funding system on student equity. The first section presents the descriptive statistics for variables associated with the study. The second and third sections reveal the results of the primary analysis associated with two principles of student equity: equal opportunity and equal treatment of equals. Section four discloses the findings of a supplementary analysis of the interrelationship among three sources of local public schooling: local rental/land-lease (RLL) school revenue, and the receipts from local taxation of property and sales.

Descriptive Statistics

Arrayed in Table 4-1 are the means, standard deviations, maximum and minimum values, and accompanying ranges for each variable used in this study for alternate years from 1977-78 to 1985-86.¹ All variables were weighted by the average daily membership in each of sixty-six public school districts and were reported in current dollars. In addition, the state average daily

TABLE 4-1

DESCRIPTIVE STATISTICS AND ANCILLARY DATA,
BY VARIABLE AND YEAR

Variable and Measure	1977-78	1979-80	1981-82	1983-84	1985-86
REVENUE PER ADM:					
Mean	\$1,110	\$1,489	\$2,102	\$2,216	\$2,417
Standard Deviation	156	257	287	342	333
Maximum Value	1,956	3,094	4,239	5,041	4,307
Minimum Value	641	1,180	1,640	1,679	1,748
Range	1,315	1,914	2,599	3,362	2,559
PROPERTY VALUE PER ADM:					
Mean	7,028	8,057	9,831	12,976	13,928
Standard Deviation*	5,172	7,220	8,043	12,189	13,279
Maximum Value	37,816	54,017	55,514	83,862	90,548
Minimum Value	1,675	1,961	2,577	3,059	3,465
Range	36,141	52,056	52,937	80,803	87,083
SALES TAX CAPACITY PER ADM:					
Mean	23,994	32,834	43,184	44,827	43,213
Standard Deviation*	11,024	13,748	19,099	19,854	20,877
Maximum Value	66,020	80,405	106,364	113,003	137,533
Minimum Value	6,660	9,931	10,950	11,761	5,937
Range	59,440	70,474	95,414	101,242	131,596
COMBINED CAPACITIES PER ADM:					
Mean	30,992	40,838	52,941	57,676	57,003
Standard Deviation*	14,044	18,116	23,257	27,076	26,981
Maximum Value	82,644	95,680	119,718	160,877	159,950
Minimum Value	10,249	13,017	8,131	15,983	16,175
Range	72,395	82,663	111,587	144,894	143,775
ANCILLARY DATA:					
State ADM	815,710	788,366	762,469	761,345	767,639
State Percent of State-Local Revenue	64.72	61.47	60.81	59.17	59.94
Local Percent of State-Local Revenue	35.28	38.53	39.19	40.83	40.06
*district weighted					

membership (ADM) and state and local percentages of state-local funds are included as ancillary data.

The descriptive statistics associated with the dependent variable, revenues per ADM, yielded the following results. The average revenue per ADM increased over the entire time-series, although the magnitude of the increases decreased over the last two assessment periods. Both the standard deviation and the maximum value of the 1985-86 distribution registered a decrease from the previous assessment, and are a likely result of an \$800 per pupil decrease in the Cameron school district (from \$5,041 in 1983-84 to \$4,239 in 1985-86).

From 1977-78 to 1985-86, all dollar values for the revenue per ADM distributions approximately doubled, except for the minimum revenue per pupil which nearly tripled, suggesting that revenues for poorer districts increased at a greater rate than did revenues for the state as a whole.

The statistics describing the distributions for the local capacity specifications follow. The average per-pupil capacity for all three specifications of local ability to support schools increased over the five evaluation years. The major increases for each of the two primary bases, however, occurred at different times.

The mean property value per ADM, for example, increased considerably from 1981-82 to 1983-84 (\$9,831 to \$12,976), whereas the mean sales tax capacity per ADM registered the greatest increase from 1977-78 to 1979-80 (\$23,562 to \$32,506) but decreased during the last year of the study. The means associated with the combined capacities mirror the pattern displayed by sales tax capacity (i.e., larger increases in the early years of the evaluation and a decrease in 1985-86); however, the influence of increased property valuation per ADM in 1983-84 is apparent.

The standard deviations also demonstrated increases for both property valuation and sales tax potential from 1977-78 to 1985-86. For each evaluation period, the values for property valuation per ADM, however, nearly equal the mean values, whereas the values associated with sales tax capacity per ADM are much smaller relative to their means.

Maximum, minimum and range values from 1977-78 to 1985-86 displayed the greatest variation among capacities. Both the maximum and minimum values for property valuation per ADM more than doubled over the time period. Although maximum values for sales tax potential more than doubled, the minimum value decreased, contributing to a much greater difference between the

range for 1977-78 and 1985-86 (\$59,440 and \$131,596 respectively). The expansion in sales tax capacity at the upper end of the distribution was probably a major contributor to changes in equality associated with sales tax potential.

Over the evaluation period, the changes in the maximum, minimum and range values associated with the combined capacity specification are more moderate than either the property valuation and sales tax capacities. (The decrease in 1981-82 minimum value is likely due to the lack of data available for Richland school district.)

Average daily membership (ADM) decreased over the first four evaluation periods, but then increased, by over 6000 students, in the last assessment period of the time-series. This increase not only reflects the national trend toward increased public school enrollment but may have been a likely influence on the per-pupil revenue and capacity measures. A second factor likely to influence both neutrality and revenue disparity measures is the overall trend toward decreased state funding over the time period.

Findings With Regard to Equal Opportunity

The principle of equal opportunity, which is of primary importance in this investigation, is represented by fiscal neutrality which requires that no relationship exist between a designated input factor (e.g., revenue, number of teachers) and local fiscal capacity (Berne and Stiefel, 1984, p.17). This absence of a relationship results in a "fiscally neutral" state school funding system.

This evaluation measured the strength of the relationship between basic revenue per pupil (the input factor) and three designations of local capacity to support education. A set of three research questions guided this portion of the investigation of student equity. Collectively they asked if fiscal neutrality changed for alternate years from 1977-78 to 1985-86 when fiscal capacity was defined alternatively as (a) district property valuation per ADM, (b) district sales tax capacity per ADM, and (c) a combination of these two capacities.

The relationship between each of the capacity specifications and per-pupil revenue was assessed using three measures--the slope of the regression line, an elasticity coefficient, and a wealth-weighted Gini coefficient. For all three measures, a score of zero

indicated a completely neutral relationship between local school district fiscal capacity and per-pupil revenues. The further a value moved in a positive direction from zero, the greater was the dependency of the per-pupil revenues on local ability-to-pay.

Because conceptual differences unique to each measure influence the results, and because a comparison of the results from the three alternative capacities was an integral component of the inquiry, the fiscal neutrality findings were grouped by measure. Thus, the differences resulting from specifying local capacity alternatively were emphasized and the value judgment represented by the measure remained constant. For each of the following analyses, the underlying concept associated with the measure is first presented followed by the findings for each of the designated fiscal capacities.

Results Using the Regression Slope

The slope of the regression line represents the magnitude of the relationship, in absolute dollar terms, between per-pupil revenue and school district fiscal capacity. It can be interpreted to mean that linear regression predicts that every additional dollar unit of fiscal capacity will be associated with an amount represented by the value of the slope (Berne and

Stiefel, 1984, p. 74). A value of 0, for example, means that increases in local property value (sales tax capacity, or combined capacities) are not associated with changes in per-pupil revenue.

Movement away from neutrality, as manifested by an increase in values, is analogous to increases in inequality brought about through greater dependency on local capacity. The values in Table 4-2 represent, for the time-series, movement toward or away from a neutral relationship between per-pupil revenue and each of the three capacity specifications.

In the first analysis, using property valuation per ADM as the capacity, the strength of the relationship increased from .01475 in 1977-78 to .02262 in 1985-86 at a fairly consistent rate, broken only by the peak value of .03115 in 1981-82. To facilitate interpretation, the value of the slope was multiplied by 1000 to reflect the dollar change in per-pupil revenues in relation to a thousand dollar change in the fiscal capacity.

In 1977-78, for example, a \$1000 increase in the per-pupil property valuation was associated with a \$14.75 change in per-pupil revenue. By 1985-86, that ratio had increased to \$22.62 for every \$1000 change in per-pupil property valuation. The steady departure from neutrality was augmented in 1981-82 when the per-pupil

TABLE 4-2

FISCAL NEUTRALITY, AS MEASURED BY THE REGRESSION SLOPE,
 USING THREE SPECIFICATIONS OF FISCAL CAPACITY
 PER ADM, ALTERNATE SCHOOL YEARS,
 1977-78 TO 1985-86

=====					
Specified	Regression Slope for School Year				
Fiscal	-----				
Capacity	1977-78	1979-80	1981-82	1983-84	1985-86

Property					
Valuation					
Per ADM	.01475	.01628	.03115	.02029	.02262
Sales Tax					
Capacity					
Per ADM	.00845	.01208	.01162	.01241	.01093
Combined					
Capacity					
Per ADM	.00706	.00927	.01019	.00914	.00922
=====					

revenue nearly doubled (from \$16.28 in 1979-80 to \$31.15 in 1981-82) for every \$1000 change, before readjusting to the more gradual decline in neutrality established over the first two assessment years. With the exception of 1981-82, an approximate \$2 increase in per-pupil revenue occurred per year examined in relation to a \$1000 change in local property valuation per pupil.

With respect to per-pupil sales tax capacity, the results in Table 4-2 suggest a gradual shift toward less neutrality from 1977-78 (.00845) to 1985-86 (.01093). In terms of dollars, a \$1000 increase in the local sales tax capacity in 1977-78 yielded a \$8.45 increase in per-pupil revenues, whereas a \$1000 increase in the last four assessments yielded \$12.08, \$11.62, \$12.41 and \$10.93, respectively.

Using the combined property valuation per ADM and sales tax capacity per ADM, findings indicated the greatest neutrality in 1977-78 (.00706). The remaining four assessments were relatively stable, although considerably less neutral, demonstrating minimal fluctuation in dependency on the combined capacity from year to year. When interpreting the results in terms of actual dollars, a \$1000 increase in combined capacity was associated with a \$7.06 change in per-pupil revenue in 1977-78, whereas this neutrality decreased by over a

third (i.e., inequality increased) by 1985-86 resulting in a ratio of \$9.22 of per-pupil revenue to \$1000 of combined property valuation/sales tax capacity per ADM.

Results Using the Elasticity Coefficient

The elasticity coefficient, unaffected by percentage changes in either variable, provides for change as a result of constant additions to one, or both, of the variables (capacity per pupil and revenue per pupil). Thus, in a study over time, it acts as a control for inflation (Berne and Stiefel, 1984, p. 79). The elasticity coefficient is the product of the slope and the ratio of the mean values of the two variables and represents the percent change in state-local revenue per pupil associated with a one percent change in local capacity. The closer the elasticity is to zero, the less responsive is per-pupil revenue to local per-pupil capacity. The higher the value, the more closely associated is per-pupil revenue with the specified capacity factor.

The results obtained from applying the elasticity measure to the relationship between per-pupil revenues and each of three specifications of local capacity are arrayed in Table 4-3. When property valuation per ADM was the designated capacity variable, the relationship fluctuated considerably across the five assessment

TABLE 4-3

FISCAL NEUTRALITY, AS MEASURED BY THE
ELASTICITY COEFFICIENT, USING THREE SPECIFICATIONS
OF FISCAL CAPACITY PER ADM, ALTERNATE SCHOOL YEARS,
1977-78 TO 1985-86

=====					
Specified	Coefficient for School Year				
Fiscal	-----				
Capacity	1977-78	1979-80	1981-82	1983-84	1985-86

Property Valuation Per ADM	.093	.088	.146	.119	.128
Sales Tax Capacity Per ADM	.179	.264	.237	.250	.191
Combined Capacity Per ADM	.194	.252	.255	.237	.212
=====					

years. The greatest decrease in neutrality was observed from 1979-80 to 1981-82 when the ratio increased from 1:.088 to 1:.146. This crest of inequality was followed by a moderate shift towards neutrality for 1983-84 and 1985-86 (.119% and .128% change in per-pupil revenues, respectively). Nevertheless, the overall change of .035 from 1977-78 to 1985-86 represented a 38% decrease in neutrality for the time-series.

When per-pupil sales tax capacity was the independent variable, there was again considerable fluctuation in neutrality from year to year. The relationship between this capacity and per-pupil revenue was most neutral in 1977-78 (.179). The results obtained in 1985-86 (.191) demonstrated a lessened responsiveness following three assessments of greater dependency of per-pupil revenue on sales tax capacity at the local school district level. Even with this return toward a more neutral condition, the results point to an overall decrease in neutrality of 6% over the time-series.

The results associated with designating a combined property valuation/sales tax capacity per ADM as the local capacity variable again revealed a more neutral relationship in 1977-78 (.194), relative to the remaining assessment years. Elasticities of over

.210 for the remaining four assessment years reflected not only greater responsiveness of per-pupil revenues to increases in the combined capacity, but a consistently stable responsiveness as well. Moreover, the overall change of .018 in the time-series is somewhat greater (9%) than the 6% shift away from neutrality observed with sales tax capacity.

Results Using the Wealth-Weighted Gini Coefficient

The wealth-weighted Gini coefficient is an additional representation of the association between local capacity and per-pupil revenues. This numerical index, based on the graphic Lorenz curve, required that Louisiana school districts first be sorted by the local fiscal capacity factor. Then the relationship between cumulative average daily membership (ADM) in the sorted districts and the accompanying cumulative total state-local revenue was calculated resulting in a coefficient between zero and one. The closer the coefficient was to zero, the more neutral was the relationship between per-pupil revenues and the specified per-pupil capacity.

Table 4-4 displays the results representing the degree of neutrality, as assessed by the wealth-weighted Gini coefficient, for the years from 1977-78 to 1985-86. The Lorenz curves, which provide a graphic presentation of the same relationships, are available as Appendix D.

TABLE 4-4

FISCAL NEUTRALITY, AS MEASURED BY THE WEALTH-
WEIGHTED GINI COEFFICIENT, USING THREE SPECIFICATIONS
OF FISCAL CAPACITY PER ADM, ALTERNATE SCHOOL YEARS
1977-78 TO 1985-86

=====					
Specified	Gini Coefficient for School Year				
Fiscal	-----				
Capacity	1977-78	1979-80	1981-82	1983-84	1985-86

Property					
Valuation					
Per ADM	.0434	.0537	.0586	.0511	.0439
Sales Tax					
Capacity					
Per ADM	.0351	.0522	.0500	.0521	.0700
Combined					
Capacity					
Per ADM	.0371	.0514	.0518	.0535	.0687
=====					

Using per-pupil property valuation per ADM, the changes in value reflect a lessening in neutrality for the middle years of the assessment period (.0537, .0586, and .0511) followed by a return in 1985-86 (.0439) to levels nearly equal to 1977-78 (.0434)--the year of greatest neutrality.

When per-pupil sales tax capacity was designated as the measure of local ability-to-pay, a much greater overall lessening in fiscal neutrality from 1977-78 (.0351) to 1985-86 (.0700) was observed. Although little fluctuation was noted through the middle years (.0522, .0500, and .0521), the increases in value (over that of the 1977-78 value) indicated a higher, sustained dependency on sales tax capacity for these five years. The coefficient for 1985-86 (.0700) was almost double that of 1977-78 (.0351) signifying an even stronger relationship between per-pupil revenue and sales tax capacity over the time-series.

When using combined property valuation/sales tax capacity per ADM as the measure of local ability-to-pay, the values ranging from .0371 to .0687 indicated that fiscal neutrality had substantially decreased from 1977-78 to 1985-86. Nevertheless, the limited changes across values during the middle assessment years (.0514, .0518, and .0535) placed the major shifts away from neutrality

in 1979-80 and again in 1985-86, with a 62% and 28% decrease, respectively.

Summary of the Assessment of Fiscal Neutrality

Arrayed in Table 4-5 are the values for 1977-78 and 1985-86 for each measure in relation to the local fiscal capacity examined. Since each measure used in this study is representative of a unique judgment of the criterion for equality, no comparisons of the degree, or equivalency across measures, relative to neutrality are made. Nevertheless, this alternative grouping presents an additional dimension that aids in summarizing the findings.

The fiscal neutrality of the state funding system is summarized by displaying the values for 1977-78 and 1985-86 and providing a subjective evaluation of movement toward or away from neutrality for the middle years of the nine-year assessment period. Listed in the final column is the status of the state funding system for 1985-86, relative to 1977-78, in terms of neutrality for each of the capacity specifications.

With respect to per-pupil property value, all measures assessed neutrality to be less in 1985-86 than in 1977-78. Although values for the slope and elasticity fluctuated after 1977-78, a continual decrease in the degree of neutrality was noted with the slope, whereas

TABLE 4-5

SUMMARY OF FISCAL NEUTRALITY FINDINGS

Capacity Specification and Measure	Assessment of Neutrality		Assessment of Middle Year Activity	Degree of Neutrality in 1985-86, Relative to 1977-78
	1977-78	1985-86		
PROPERTY VALUATION PER ADM:				
Regression Slope	.01475	.02262	Fluctuating, but less neutrality	Less neutral
Elasticity Coefficient	.093	.128	Fluctuating, but less neutrality	Less Neutral
Gini Coefficient	.0434	.0439	Stable, but less neutrality	Equivalent
SALES TAX CAPACITY PER ADM:				
Regression Slope	.00846	.01093	Fluctuating, but less neutrality	Less Neutral
Elasticity Coefficient	.180	.191	Fluctuating, but less neutrality	Less Neutral
Gini Coefficient	.0351	.0700	Stable, and less neutrality	Less Neutral
COMBINED CAPACITY PER ADM:				
Slope	.00706	.00922	Stable, but less neutrality	Less Neutral
Elasticity Coefficient	.194	.212	Stable, but less neutrality	Less Neutral
Gini Coefficient	.0371	.0687	Stable, but less neutrality	Less Neutral

the fluctuations of the elasticity coefficient resulted in greater neutrality in 1979-80. Moreover, this was the only incident, over time and across capacity specifications, in which the lowest degree of neutrality recorded was not in 1977-78. For the wealth-weighted Gini coefficient, neutrality was determined to be nearly equal at the beginning and end of the nine-year period. At no time, however, did the coefficient drop below the 1977-78 value of .0434.

In connection with per-pupil sales tax capacity, all measures again indicated less neutrality for 1985-86 than for 1977-78. The middle years again show considerable fluctuation when measured by the elasticity and a more stable, but less neutral, pattern when measured by the slope and Gini coefficient.

Relative to combined property value/sales tax capacity per ADM, all measures again assessed neutrality greatest in 1977-78 and least in 1985-86. The results for all three measures, however, indicated less divergence from neutrality from 1979-80 to 1983-84.

Findings With Regard to Equal Treatment of Equals

A second objective of the study was to evaluate the state's public school funding system in terms of the equal treatment of equals principle. Based on the

belief that students with comparable needs should receive equal shares of any object, the equal treatment of equals principle represents the degree of disparity in basic revenue per ADM. Greater equality among pupils is thought to exist when the dispersion of the distribution of revenues is reduced.

The research question guiding these analyses asked if the disparity in revenue per pupil changed for alternate years from 1977-78 through 1985-86. The Coefficient of Variation (CV), the Federal Range Ratio (FRR), and the McLoone Index (MI) were used to evaluate distributional inequality, i.e., disparity in basic per-pupil revenue. For each analysis, this section will first briefly describe the measure, then present the findings, and finally, to make the results more meaningful, link these results to the current dollar data for each year.

Results of the Coefficient of Variation

The CV utilizes the entire distribution and is concerned with the variance around the mean of basic revenues per student. The CV is calculated by dividing the square root of the variance (the standard deviation) by the mean value of the distribution. The CV's relationship to the mean and standard deviation can be used to explain the variation for a given proportion of

students. A CV equal to zero, for example, indicates that two-thirds of the state's students receive revenues equal to the statewide mean value of per-pupil revenues. In other words, if the mean per-pupil revenue were \$2000 per ADM, and the CV were zero, the middle 66% of the students in the state would each be receiving \$2000 in state-local revenues. This is the criterion for perfect equality as measured by CV. Conversely, the further the CV moves away from zero, the greater the inequality in the distribution of per-pupil revenues.

The CVs for the assessment years are disclosed in Table 4-6 and are accompanied by the mean and the range of the per-pupil revenue distribution for students at one standard deviation of the mean. Although the CVs fluctuated considerably for the time-series, per-pupil revenue, based on this measure, was only slightly more equally distributed among the state's students in 1985-86 than in 1977-78.

The CV provides a truer picture of equality than a comparison of current dollars. Multiplying the 1977-78 CV of .1411 times the mean value (\$1110) provides the amount of dollar variation (equal to one standard deviation) from the mean for that year (\$157). Doubling the dollar variation from the mean provides the range of per-pupil revenue received by two-thirds of the students

TABLE 4-6

COEFFICIENT OF VARIATION, STATEWIDE MEAN REVENUE
PER ADM, AND DOLLAR DISTANCE FROM THE MEAN
FOR ALTERNATE SCHOOL YEARS,
1977-78 TO 1985-86

=====				
Per-Pupil Revenues				

Year	CV	Statewide Mean	Maximum Dollar Distance From the Mean for 2/3 of Students	Range of Dollars Received by 2/3 of the Students

1977-78	.1411	\$1110	157	\$953-1267
1979-80	.1728	1489	257	1232-1746
1981-82	.1367	2102	287	1815-2389
1983-84	.1545	2216	342	1874-2558
1985-86	.1349	2471	333	2138-2804
=====				

(\$953-1267). In 1985-86, when the mean per-pupil revenue more than doubled that of 1977-78, the range of dollars received by sixty-six percent of the students in the state widened from \$314 to \$666. The nearly equivalent CVs (.1411 and .1349) indicated that 2/3 of the students, for each year, received per-pupil revenue that differed no more than approximately 14% from the mean.

Results of Federal Range Ratio

The Federal Range Ratio (FRR) represents the relationship between a specific range of per-pupil revenue (i.e., the difference between high and low values) and the dollar value of per-pupil revenue at the lower end of the scale. The FRR is limited to the distribution of per-pupil revenue in the restricted range (i.e., between the 95th and 5th percentile) and is designed to exclude the values at either end. Exclusion is based on the assumption that extreme values may likely distort results. An FRR of zero represents perfect equality and occurs when students at the 95th and 5th percentiles receive equal per-pupil revenues. On the other hand, the further the FRR departs from zero, the greater the inequality in the distribution among those pupils.

In addition to the FRRs, Table 4-7 displays the per-pupil revenue at the 95th and 5th percentiles of the distribution and the resultant restricted range for each assessment year. An examination of the data reveals the greatest distributional inequality in the school year 1977-78. The consistent decrease in FRR values (from a high of .6545 to a low of .3940) indicates continued advancement toward less disparity of per-pupil revenues for students in the restricted range over the entire nine-year period.

Odden and Berne (1979) clarify the underlying meaning of the FRR value by suggesting that an alternative

... way to interpret the Federal Range Ratio is that the 95th percentile spends 1 plus the Federal Range Ratio (score) more than the 5th percentile (p. 23).

Using this rationale, the data from Table 4-7 indicated that a student at the 95th percentile in 1977-78 had 1.65 as much revenue available to him as a student at the 5th percentile, whereas, in 1979-80, that per-pupil revenue had decreased to 1.46 percent. By 1986, a student at the 95th percentile received only 1.39 times as much revenue as the student at the 5th percentile.

TABLE 4-7

THE FEDERAL RANGE RATIO, VALUES OF THE 5TH
AND 95TH PERCENTILES, AND THE RESTRICTED
RANGE FOR ALTERNATE YEARS, 1977-78 TO 1985-86

=====				
Per-Pupil Revenues				

Year	FRR	5th Percentile (low)	95th Percentile (high)	Restricted Range

1977-78	.6545	\$ 796	\$1317	\$521
1979-80	.4600	1226	1790	564
1981-82	.4512	1720	2496	776
1983-84	.4392	1798	2588	790
1985-86	.3940	2010	2802	792
=====				

Results of the McLoone Index

The McLoone Index (MI) was designed to determine the degree of inequality evident in distributions below the median while ignoring inequality in the upper half of the distribution. The primary intent of the measure is to determine the funding required to bring low per-pupil revenue to the median level. Theoretically, an index of 1.0 represents perfect equality; i.e., each student below the median receives the median amount, whereas an index of 0 indicates total inequality.

Subtracting the MI from 1.0, and converting to percent, gives the increased percentage of per-pupil funds needed to "level up" students to the median level. When that percent is multiplied by the median per-pupil value, the required amount of revenue per pupil is determined. Multiplying that requirement by the number of students in the lower half of the distribution provides the total revenue required to level up students below the median to the median level. The following example is offered as an explanation. Assume median per-pupil revenue to be \$1000, the MI to be .90, and enrollment below the median to be 6000. The amount needed to level up sub-median students would be equal to sixty thousand dollars (i.e., $1.0 - .90 = .10$; $.10 \times \$1000 = \100 ; $\$100 \times 6000 \text{ students} = \$60,000$).

The McLoone Indices for each year of the study are presented in Table 4-8 along with the median of the distribution and the calculated additional per-pupil revenue required to equalize the lower half of the distribution to the median level. For the nine-year period, the finding of .9138 in 1977-78 demonstrated the greatest equality in distributing revenues among students falling below the median dollar figure. Following a period of greater disparity (1979-80 to 1981-82), an index of .9093 in 1983-84 represented a brief reversal in the pattern. The final index of .8798 nearly equalled that of 1981-82 when the greatest disparity in per-pupil revenue was registered.

Thus, in 1977-78, the state plan for funding basic education allowed an approximate 9% shortage in funding each student situated below the median at the median dollar value of \$1096. The shortage increased to approximately 12% in both 1981-82 and 1985-86 (indices of .8783 and .8798, respectively). These figures indicate that an additional \$298 per pupil would have been required in 1985-86 in order to level the entire lower half of the student distribution to the median level. Since 383,820 students were funded below the median amount, the total cost for leveling up students

TABLE 4-8

THE McLOONE INDICES AND MEDIAN
PER-PUPIL REVENUES FOR ALTERNATE
YEARS, 1977-78 TO 1985-86

Year	Index	Median Per-Pupil Revenue	Per-pupil Revenue Required to "level up" to the Median
1977-78	.9138	\$1096	\$ 94
1979-80	.8879	1497	167
1981-82	.8783	2143	261
1983-84	.9093	2169	197
1985-86	.8798	2483	298

to the median would have been approximately \$114 million.

Summary of the Assessment of Disparity in Per-pupil Revenue

Displayed in Table 4-9 is a summary of the findings for the three measures used in assessing distributional inequality. The format approximates that of Table 4-5 in that it presents the values for 1977-78 and 1985-86 and provides a subjective evaluation of movement toward or away from equality in the distribution of per-pupil revenue for the middle years of the nine-year assessment period. Listed in the final column is the status of the state funding system for 1985-86, relative to 1977-78, in terms of disparity in per-pupil revenue as evaluated by each of the measures.

The results for the assessment for the time-series can be briefly summarized in the following way: (a) When the entire distribution was in question, such as that measured by the CV, there was considerable fluctuation in disparity; (b) when the per-pupil revenue for the upper and lower five percent of the distribution was eliminated, as when measured by the FRR, there was a consistent trend towards less disparity; and 3) when only the distribution below the median was considered, as when measured by the MI, there was a tendency

TABLE 4-9

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SUMMARY OF DISPARITY IN REVENUE FINDINGS

Measure	Assessment of Disparity		Middle Year Activity	Degree of Disparity in 1985-86 Relative to 1977-78
	1977-78	1985-86		
Coefficient of Variation	.1411	.1349	Fluctuating Disparity	Less Disparity
Federal Range Ratio	.6545	.3940	Increasing Disparity	Less Disparity
McLoone Index	.9138	.8798	Fluctuating Disparity	More Disparity

(tempered by mild fluctuations) to move toward greater disparity.

Local Rental/Land Lease (RLL) Revenue

As a Factor in Funding

Three sources of local revenue for supporting public schools are available to approximately half of the school districts in Louisiana. In addition to revenue received as a result of taxing property and sales, districts owning property may generate revenues (through rentals, leases and royalties on products removed) that are independent of the state equalization system for funding schools. Rental/land-lease (RLL) revenue is derived from both 16th section lands and additional school-owned property. The state deeded the 16th section lands (which were originally federal properties transferred to the states for public school purposes) to local parish districts in the latter part of the 19th century. For at least two districts, RLL revenue has been substantial and has contributed to their ability to sustain higher levels of per-pupil revenue. For other districts, the revenue has been more limited. For a few, RLL revenue supplants extensive use of property and sales taxes (Cameron school district, for example, uses no sales tax and has one of the highest per-pupil revenues in the state). For others,

this source supplements taxes received from both property and sales. (East Carroll school district, for instance, relies on all three sources, and is still one of the poorest in the state.)

This assessment was guided by two research questions. The first asked what percentage of local-state funds were attributable to RLL revenue and if that percentage changed from 1977-78 to 1985-86. The districts receiving 1% or more of state-local funds were then further evaluated. The second question sought to determine (a) the interrelationship among RLL revenue, property tax revenue and sales tax revenue for 1977-78, 1981-82, and 1985-86, and (b) the effect of changes in RLL revenue on subsequent reliance on property or sales tax capacities.

Table 4-10 identifies the 22 parish districts meeting the criterion (i.e., parishes that received 1% or more of state-local funds from RLL revenue in either 1977-78 or 1981-82) and displays the ratios of RLL funds to total state-local revenue for 1977-78, 1981-82 and 1985-86 as well as the changes in percent from each year to the next.

Only two parishes, Vermilion and Cameron, received substantial RLL revenue, relative to state-local revenue, for the time-period and are listed first in

TABLE 4-10

RELATIONSHIP BETWEEN ALL REVENUE AND
STATE-LOCAL REVENUE, BY PERCENT,
FOR 1977-78, 1981-82 AND 1985-86

District	Percent ALL Revenue is of State-Local Revenue			Change in percent from		
	1977-78	1981-82	1985-86	1977-78	1981-82	1977-78
				to	to	to
				1981-82	1985-86	1985-86
COASTAL LOUISIANA						
Vermilion	23.92	14.90	12.47	-9.01	-2.43	-11.44
Cameron	22.74	33.94	25.13	11.20	-8.81	2.39
COASTAL AND SOUTH LOUISIANA						
Acadia	1.05	.95	2.81	-.10	1.86	1.76
Assumption	2.36	2.04	1.87	-.31	-.17	-.48
Evangeline	.37	1.67	.30	1.30	-1.37	-.07
Iberia	.24	2.16	.24	1.93	-1.92	.00
Iberville	.12	1.01	.48	.89	-.53	.36
Lafayette	.47	2.16	.95	1.69	-1.21	.48
LaFourche	2.84	1.78	.69	-1.06	-1.09	-2.15
Plaquemines	.01	1.04	.12	1.03	-.92	.11
Terrebonne	2.91	5.80	2.54	3.29	-3.26	.03
St. Martin	2.99	.00	2.64	-2.99	2.64	-.35
St. Mary	4.92	3.41	1.45	-1.51	-1.96	-3.47
Tangipahoa	.19	3.08	.04	2.89	-3.04	-.15
W. Baton Rouge	1.32	1.92	.70	.60	-1.21	-.61
CENTRAL AND NORTH LOUISIANA						
Catahoula	1.34	2.37	1.01	1.02	-1.36	-.34
Concordia	1.62	3.18	1.13	1.55	-2.04	-.49
East Carroll	5.16	7.00	1.07	1.84	-5.93	-4.09
Madison	2.20	.86	.50	-1.34	-.36	-1.69
Morehouse	1.21	.90	.49	-.31	-.41	-.72
Wachitoches	4.47	9.62	7.47	5.15	-2.15	3.01
Richland	2.40	2.38	.48	-.02	-1.89	-1.91
State						
Total	.93	1.25	.66	.32	-.59	-.28

Source: Louisiana State Department of Education, unpublished school district data for 1977-78, 1981-82 and 1985-86. Author calculations.

Table 4-10. The remaining parishes are grouped according to geographical location (a) in coastal and south Louisiana and (b) in northern Louisiana. The parishes along the coast line are likely to obtain RLL revenue through renting, leasing and receiving royalties on mineral-rich land. Those parishes in the northern part of the state are likely to receive revenue through rental and lease of school-owned property to farming and/or timber interests. Figure 4-1 displays the geographic location of these parish school districts.

For the entire assessment period, the proportions of RLL revenue to state-local revenue vary considerably. Overall, there were more gains than decreases from 1977-78 to 1981-82. The greatest decrease in percentage of RLL revenue, relative to state-local revenue, occurred from 1981-82 to 1985-86 when 21 of 22 parish districts experienced decreases in reliance on RLL revenue (and therefore subsequent increases in other sources, either local, state, or a combination of the two).

The two districts registering the greatest RLL revenue per pupil varied over the time period. Vermilion school district experienced an overall percentage decrease of 11.44%, with the majority of loss suffered from 1977-78 to 1981-82. Cameron, on the other hand, had an overall increase of 2.39% in RLL revenue,

relative to state-local funds. A third of this district's state-local funds was received through local RLL revenue in 1981-82. This share was reduced to one-fourth in 1985-86.

Interrelationship Among Local Sources

Table 4-11, 4-12, and 4-13 display the ratios of RLL, property tax and sales tax revenues to total local school revenue for these same assessment years. Local revenue received from other sources (e.g., bond interest, tuition, taxes from the police jury) make up the remaining percentage.

Of the 20 parishes making up the lower two groups of Tables 4-11, 4-12, and 4-13, Natchitoches ranks first in reliance on RLL revenue, relative to other local sources. By 1981-82, this district had doubled its reliance on RLL revenue (while concurrently decreasing its dependency on both sales and property tax bases). By 1985-86, even with a drop to 25.06% dependency from 30.77% in 1981-82, Natchitoches ranked with Vermilion and Cameron School Districts in terms of proportion of local revenue attributable to RLL revenues.

High variability in the degree of reliance on RLL funds in general exists for the remaining parishes. For instance, support from RLL revenue, relative to other local sources, ranged from .02% to 18.56% in 1977-78 to

TABLE 4-11

RELATIONSHIP OF TAX/REVENUE SOURCES TO
LOCAL REVENUE, BY PERCENT, FOR 1977-78

District	Local Revenue Per ADM	Local Revenue	Percent of Local Revenue Derived From			
			RLL Revenue	Property Tax	Sales Tax	Other Revenue
Cameron	1,183	2,479,400	40.59	48.07	.00	11.34
Vermilion	845	8,157,756	48.69	14.71	28.58	8.03
Acadia	399	4,563,327	3.27	36.78	47.10	12.85
Assumption	287	1,484,953	9.20	30.34	47.34	13.13
Evangeline	256	1,942,329	1.66	31.17	51.67	15.50
Iberia	356	5,512,792	.80	40.74	46.27	12.19
Iberville	658	4,679,220	.30	33.97	59.14	6.59
Lafayette	479	13,382,013	1.91	17.54	67.45	13.10
Lafourche	398	7,432,239	8.80	29.89	48.22	13.09
Plaquemines	430	2,439,487	.02	40.32	21.28	38.38
St. Martin	295	2,666,147	11.53	35.14	43.59	9.74
St. Mary	475	6,813,207	13.23	43.72	34.29	8.76
Tangipahoa	223	3,363,188	1.09	23.03	59.83	16.05
Terrebonne	400	13,075,451	5.90	29.66	51.60	12.84
West Baton Rouge	678	2,643,104	3.24	3.28	48.03	45.45
Catahoula	341	1,017,805	5.37	47.87	36.22	10.54
Concordia	325	1,649,057	6.28	27.49	46.14	20.08
East Carroll	321	853,448	18.56	32.75	42.50	6.19
Madison	281	1,019,055	8.91	24.96	59.63	6.51
Morehouse	354	2,531,330	4.11	41.90	44.48	9.52
Wachitoches	344	3,162,214	16.67	28.43	39.60	15.30
Richland	345	1,738,006	8.89	22.36	59.25	9.51
Distribution Total		92,605,528	10.32	29.15	47.16	13.37
State Total		379,171,335	2.67	35.83	50.33	11.17

Source: Louisiana State Department of Education. 1978.

TABLE 4-12

RELATIONSHIP OF TAX/REVENUE SOURCES TO
LOCAL REVENUE, BY PERCENT, FOR 1981-82

District	Local Revenue per ADM	Local Revenue	Percent of Local Revenue Derived From			
			RLL Revenue	Property Tax	Sales Tax	Other Revenue
Cameron	4,185	8,813,358	45.68	23.97	0.00	30.35
Vermilion	1,599	14,768,802	28.23	23.03	34.81	13.92
Acadia	730	7,744,153	2.71	30.16	47.14	19.99
Assumption	864	4,538,852	5.35	33.06	33.26	28.33
Evangeline	449	3,304,506	7.26	31.70	44.12	16.92
Iberia	946	14,729,604	5.36	17.81	60.04	16.79
Iberville	1,081	6,771,447	2.53	25.09	61.24	11.14
Lafayette	1,201	31,190,626	4.73	10.91	68.71	15.66
Lafourche	810	14,419,670	4.94	37.36	42.70	15.00
Plaquemines	1,090	5,694,939	2.10	22.74	63.93	11.23
St. Martin	631	5,672,833	0.00	31.52	46.65	21.83
St. Mary	1,614	20,628,174	6.41	24.49	56.98	12.11
Tangipahoa	475	7,406,896	12.90	9.27	57.75	20.09
Terrebonne	1,170	24,560,171	12.61	17.90	54.99	14.50
West Baton Rouge	1,089	4,138,246	4.68	32.75	44.73	17.84
Catahoula	648	1,751,458	9.53	32.39	43.94	14.13
Concordia	584	2,733,262	11.89	21.27	43.44	23.40
East Carroll	668	1,754,876	22.22	15.26	49.38	13.15
Madison	366	1,269,077	4.21	18.70	61.39	15.70
Morehouse	505	3,343,648	3.61	36.93	42.95	16.50
Matchitoches	849	6,276,084	30.27	21.20	31.51	17.01
Richland	840	3,236,611	9.78	31.64	29.10	29.48
Distribution Total		194,747,293	10.78	22.25	50.31	16.66
State Total		732,836,306	3.19	26.29	53.72	16.80

Source: Louisiana State Department of Education, unpublished
data submitted by individual school districts for 1981-82.

TABLE 4-13
RELATIONSHIP OF TAX/REVENUE SOURCES TO
LOCAL REVENUE, BY PERCENT, FOR 1985-86

District	Local Revenue Per ADM	Local Revenue	Percent of Local Revenue Derived From			
			RLL Revenue	Property Tax	Sales Tax	Other Revenue
Cameron	3,866	7,840,736	36.00	48.30	.00	15.71
Vermilion	1,552	15,189,183	25.65	19.42	24.16	30.77
Acadia	738	7,698,287	9.07	35.64	37.77	17.53
Assumption	874	4,336,132	5.55	31.92	47.59	14.94
Evangeline	493	3,505,815	1.40	39.41	39.00	20.19
Iberia	814	12,848,174	.75	26.02	53.67	19.55
Iberville	1,305	7,323,230	1.19	37.50	46.98	14.33
Lafayette	1,251	31,790,262	2.30	30.67	55.73	11.30
Lafourche	961	15,948,630	1.90	50.19	35.45	12.45
Plaquemines	2,338	11,532,991	.19	52.71	29.69	17.42
St. Martin	922	8,262,908	7.55	31.90	47.88	12.67
St. Mary	1,232	15,287,065	3.38	40.14	47.08	9.41
Tangipahoa	960	16,209,737	.11	19.45	62.56	17.88
Terrebonne	985	20,561,459	6.58	27.06	49.20	17.16
West Baton Rouge	1,247	4,622,022	1.73	51.26	33.77	13.24
Catahoula	712	1,894,326	4.21	50.33	28.69	16.78
Concordia	680	3,475,026	4.13	37.63	38.86	19.38
East Carroll	393	956,569	5.74	13.31	40.18	40.77
Madison	432	1,254,305	2.87	18.90	64.62	13.61
Morehouse	602	3,665,952	1.97	37.68	45.99	14.36
Matchitoches	928	6,796,703	25.06	24.44	34.17	16.32
Richland	921	4,417,578	1.46	41.93	34.29	22.31
Distribution						
Total		205,417,090	6.67	33.86	43.19	16.29
State						
Total		898,056,649	1.64	33.43	46.92	18.01

Source: Louisiana State Department of Education, unpublished
data submitted by individual school districts for 1985-86.

.11% to 9.07% in 1985-86, following a range of 0% to 22.22% in 1981-82. Furthermore, only five parishes (excepting Cameron, Vermilion, and Natchitoches) received 5% or more of local funds from RLL revenue for at least 2 of the 3 assessment years--Assumption, Terrebonne, Catahoula, Concordia and East Carroll.

Comparing these 22 parish districts to the state as a whole, the 1977-78 ratio of 4:1 in terms of reliance on RLL revenue had been reduced to about 3:1 in 1981-82, only to reverse itself to 4:1 in 1985-86. The overall magnitude of reliance, however, for these parishes had decreased from 10.32% to 6.67% in 1985-86.

Table 4-14 reveals the percentage change between assessment years and between initial (1977-78) and final (1985-86) years of the time-series. For the overall period from 1977-78 to 1985-86, fifteen of these 22 districts decreased their reliance on RLL revenue as a source of local revenue, but the resultant shift in dependency to alternate sources was not uniform.

Cameron and Vermilion school districts, both of which depended heavily on RLL revenue in 1977-78 (40.59% and 48.69%, respectively in Table 4-11), experienced a decrease in RLL revenue, relative to other sources, by 1985-86. Of the two, Cameron made no overall percentage changes in dependency on property or sales bases over

TABLE 4-14
 PERCENTAGE CHANGE IN SOURCES OF LOCAL REVENUE
 RELATIVE TO TOTAL LOCAL SCHOOL REVENUE
 FROM 1977-78 TO 1985-86

Parish	Change in percent of RLI Revenue from		Change in percent of Property Tax Revenue from		Change in percent of Sales Tax Revenue from		Overall Percentage Change in Revenue from 1977-78 to 1985-86 for		
	1977-78 to 1981-82	1981-82 to 1985-86	1977-78 to 1981-82	1981-82 to 1985-86	1977-78 to 1981-82	1981-82 to 1985-86	RLI Revenue	Property Tax	Sales Tax
Cameron	5.09	-9.68	-24.10	24.32	.00	.00	- 4.59	.22	.00
Vernilion	-20.46	-2.58	8.33	- 3.62	6.23	-10.63	-23.04	4.71	- 4.42
Acadia	- .56	6.35	- 6.62	5.48	.04	- 9.37	5.79	- 1.14	- 9.33
Assumption	- 3.85	.29	2.73	- 1.14	-14.07	14.32	- 3.65	1.59	.25
Evangeline	5.60	- 5.86	.53	7.71	- 7.55	- 5.12	- .25	8.23	-12.67
Iberia	4.56	- 4.61	-22.93	8.21	13.77	- 6.36	- .05	-14.72	7.40
Iberville	2.23	- 1.34	- 8.88	12.41	2.16	-14.26	.89	3.53	-12.16
Lafayette	2.82	- 2.42	- 6.64	19.76	1.25	-12.98	.40	13.13	-11.73
Lafourche	- 3.86	- 3.04	7.48	12.82	- 5.52	- 7.24	- 6.89	20.38	-12.77
Plaquemines	2.08	- 1.92	-17.58	29.97	42.65	-34.24	.17	12.39	8.41
St. Martin	-11.53	7.55	- 3.62	.38	3.06	1.23	- 3.98	- 3.24	4.29
St. Mary	- 6.81	- 3.03	-19.22	15.64	22.69	- 9.91	- 9.85	- 3.58	12.78
Tangipahoa	11.81	-12.79	-13.76	10.18	- 2.08	4.82	- .99	- 3.58	2.73
Terrebonne	6.71	- 6.03	-11.76	9.16	3.40	- 5.79	.68	- 2.60	- 2.39
West Baton Rouge	1.43	- 2.95	24.47	18.50	- 3.30	-10.96	- 1.52	47.97	-14.25
Catahoula	4.16	- 5.32	-15.47	17.93	7.72	-15.26	- 1.16	2.46	- 7.54
Concordia	5.61	- 7.76	- 6.23	16.36	- 2.76	- 4.58	- 2.15	10.14	- 7.28
East Carroll	3.66	-16.48	-17.49	- 1.95	6.88	- 9.19	-12.82	-19.44	- 2.32
Madison	- 4.69	- 1.33	- 6.26	.21	1.76	3.23	- 6.04	- 6.85	4.99
Morehouse	- .49	- 1.65	- 4.97	.75	- 1.53	3.04	- 2.14	- 4.22	1.51
Natchitoches	13.60	- 5.21	- 7.23	3.24	- 8.89	2.66	8.39	- 3.99	- 5.43
Richland	.90	- 8.32	9.29	10.29	-30.15	5.20	- 7.43	19.58	-24.96
Distribution Total	.46	- 4.12	- 6.90	11.61	3.15	- 7.12	- 3.66	4.71	- 3.97
State Total	.52	- 1.55	- 9.54	7.15	3.39	- 6.81	- 1.04	- 2.39	- 3.41

Sources: Louisiana State Department of Education, unpublished
 data for local school districts for 1977-78, 1981-82 and 1985-86.
 Author calculations.

the nine-year period (although periodic fluctuations are apparent when the previous tables are examined).

Vermilion, on the other hand, mildly increased its reliance on property tax and received less local funding through the sales tax capacity. Both of these districts received greater proportions of revenue through other sources (e.g., interest on deposits, bond sales and tuition).

For the remaining districts, 14 of the 20 had to shift local reliance to other sources of local revenue from 1977-78 to 1985-86. One half of those showing a reduction in dependency on RLL revenue, i.e., Assumption (-3.65), Evangeline (-.25), LaFourche (-6.88), West Baton Rouge (-1.52), Catahoula (-1.16), Concordia (-2.15), and Richland (-7.43), indicated an increased reliance on the property tax. Of the remaining seven, 6 increased dependency on the sales tax. Assumption school district increased reliance on both, whereas the data for East Carroll school district revealed a decrease in proportions attributable to all three sources, showing instead a 40.77% dependency on other sources of revenue in 1985-86 as opposed to only 6.19% in 1977-78 (see Table 4-11 and 4-13).

Table 4-15 displays a summary of the proportional changes for the 22 parishes from 1977-78 to 1985-86.

TABLE 4-15

SUMMARY OF INTERRELATIONSHIP OF THREE SOURCES
OF LOCAL REVENUE FOR 22 DISTRICTS,
FROM 1977-78 TO 1985-86

Districts Which Experienced Decreased RLL Revenue	Concurrent Shifts in Reliance on Revenue		Districts Which Experienced Increased RLL Revenue	Concurrent Shifts in Reliance on Revenue	
	Property	Sales		Property	Sales
Cameron	+‡	0	Acadia	-	-
Vermilion	+	-	Iberville‡	+	-
Assumption	+	+‡	Lafayette‡	+	-
Evangeline‡	+	-	Plaquemine‡	+	+
Iberia‡	-	+	Terrebonne‡	-	-
LaFourche	+	-	Natchitoches	-	-
St. Martin	-	+			
St. Mary	-	+			
Tangipahoa‡	-	+			
West Baton Rouge	+	-			
Catahoula	+	-			
Concordia	+	-			
East Carroll	-	-			
Madison	-	+			
Morehouse	-	+			
Richland	+	-			

‡ Percentage change of less than 1 percent.

About two-thirds of the districts receiving 1% or more of local school funds from RLL revenue had to shift to other sources through the time-period. Of the 16 that lost RLL revenue, 7 increased usage of property revenue and decreased reliance on sales revenue, one (Assumption) increased its dependency on both sources, and one (East Carroll) decreased its reliance on both sources. Another (Cameron) only minimally increased its proportion of property tax revenue and at no time utilized its sales tax capacity.

Of the remaining six which showed an increase in proportion of RLL funds from 1977-78 to 1985-86, three decreased reliance on both property and sales revenue, one (Plaquemines) increased dependency on both sources and two increased reliance on property while decreasing reliance on sales revenue.

This section attempted to examine some aspects of the interrelationship among local revenue sources by assessing the relative reliance placed on different sources over the nine-year time-series. For the total distribution of 22 parishes receiving 1% or more of their state-local revenue from RLL funds, there was decreased reliance on RLL revenue, decreased reliance on sales tax revenue, and increased reliance on both property tax revenue and other sources. In comparison,

the state as a whole decreased its reliance on the three local sources of revenue--RLL, property tax and sales tax--and at the same time, increased reliance on other local sources (from 11.17% in 1977-78 to 18.01% in 1985-86).

The dollar values utilized in this analysis included total local revenue, i.e., no adjustments were made for funds intended for debt service and capital outlay, or special services to students or the community. Therefore, the results serve only as a gross representation of the interdependence of sources of local school revenue as defined in this study.

Summary

This chapter presented the results of several analyses of alternate year data for Louisiana school districts from 1977-78 to 1985-86. Two principles of student equity, equal educational opportunity and equal treatment of equals, were conceptualized as fiscal neutrality and disparity in per-pupil revenue, respectively. Each was operationalized in three different ways. Further, for fiscal neutrality, three specifications of the independent variable, fiscal capacity, were designated. The results, when presented, were clustered around the measure to facilitate examination of the differences due to capacity specification.

An additional analysis of a portion of the data assessed the interdependence of local rental/land-lease (RLL), property tax, and sales tax revenue in those districts which met the criterion of 1% of total state-local revenue attributable to RLL revenue.

Endnotes

¹Due to the differences between the information reported in the annual report of 1977-78 and that reported in years beyond, 1977-78 sales tax rates were not separately available for school districts. The following procedure was used to extrapolate data representing the capacity specifications: (a) sales tax capacity and (b) combined capacity for 1977-78. Since school district sales tax revenue was reported in 1977-78, the sales tax rate for 1979-80 was used as a proxy rate for 1977-78. A comparison of the actual sales tax revenues across parishes for 1977-78 and 1979-80 revealed the likelihood, in a small number of cases, that rates were less in 1977-78. In those cases, an adjustment was made in the rate, so that the ratio of 1977-78 tax capacity to 1979-80 tax capacity was comparable to the ratio of the averages for the two periods. To the degree that application of 1970-80 rates and subsequent adjustments were in error, the assessments for 1977-78 may be suspect.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This chapter summarizes the study, provides conclusions based on the analyses and suggests implications for these conclusions.

Summary

The primary analysis of this study emphasized the effects of the Louisiana school funding system on two dimensions of student equity: equality of opportunity and equal treatment of equals. This was accomplished by assessing alternate year data from 1977-78 to 1985-86 in order to document changes, if any, that occurred in the equality associated with the distribution of state and local revenue. A secondary analysis explored the interrelationship among three local sources of school revenue for 1977-78, 1981-82 and 1985-86.

Berne and Stiefel's (1984) conceptual framework for measuring equity was utilized to determine the variables and measures used in the primary analysis. Of first importance was the investigation of equal opportunity. This principle was represented by the fiscal neutrality standard, which was defined as a lack of relationship between per-pupil revenue and local fiscal capacity. In

order to provide a more comprehensive and relevant assessment, local fiscal capacity was alternately specified as (a) property valuation per ADM, (b) sales tax capacity per ADM, and (c) combined property valuation and sales tax capacity per ADM. For each specification, multiple measures assessing the strength of the relationship between per-pupil revenue and capacity per ADM were applied.

The second principle of student equity, equal treatment of equals, was represented by the degree of disparity among per-pupil state-local revenue and was again multiply assessed. Three univariate measures determined the degree of dispersion in the distributions of per-pupil revenue for the five assessment years included in the evaluation.

Three factors related to the local support of schools prompted the supplementary analysis of the data: (a) the growing dependence on local sales tax revenue, (b) a fluctuation, for some districts, in the ability to generate rental/land-lease revenue (RLLE), and (c) the decrease in the state's share of public school funding from 1977-78 to 1985-86. The intent of this analysis was to explore the interrelationship among local sources of school revenue as well as any subsequent changes in these relationships over the evaluation period.

Chapter II presented a review of the literature pertaining to this study. The review first included an overview of the concept of equity as defined by Alexander (1982) as well as a description of the Berne and Stiefel (1984) conceptual framework for examining equity. A review of pertinent national and state equity studies was followed by a presentation of the research related to issues surrounding the inclusion of broadened definitions of local ability to pay for schools, i.e., local fiscal capacity.

Chapter III outlined the conceptual framework, presented the research questions and methodology guiding this study, and explained the statistical measures. Chapter IV then presented the analyses of the data and subsequent findings.

Conclusions

The conclusions associated with the primary analysis are followed by observations of factors associated with the results of each equity principle, as well as additional political and economic factors, which may have had at least a partial effect on the results. The conclusion and discussion associated with the supplementary analysis are followed by a brief summation.

Conclusions Associated With the Primary Analysis

Two conclusions were drawn from the primary analysis and were associated with the following four research questions:

- 1) Has fiscal neutrality changed for alternate years from 1977-78 through 1985-86, when fiscal capacity of a district is defined as taxable assessed property valuation per ADM?
- 2) Has fiscal neutrality changed for alternate years from 1977-78 through 1985-86, when fiscal capacity of a school district is defined as sales tax capacity per ADM?
- 3) Has fiscal neutrality changed for alternate years from 1977-78 through 1985-86, when fiscal capacity of a school district is defined as combined property valuation and sales tax capacity per ADM?
- 4) Has disparity in revenue per pupil in ADM changed for alternate years from 1977-78 through 1985-86?

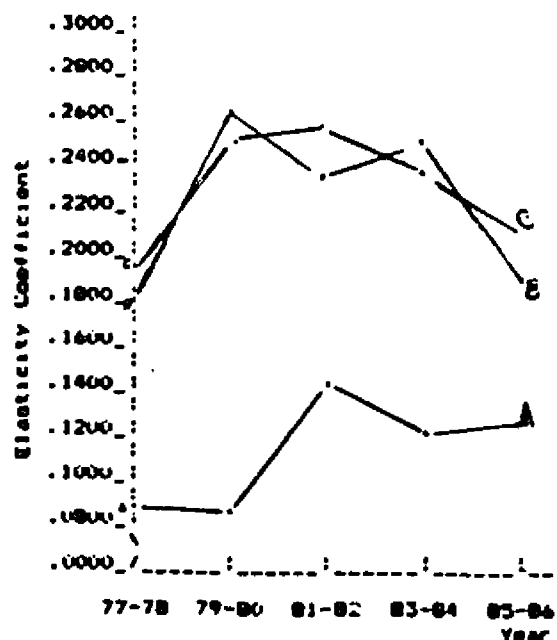
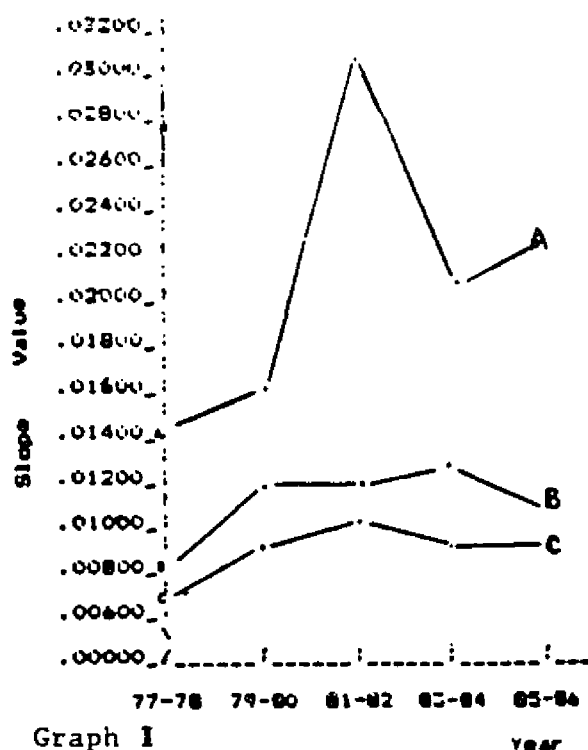
The first conclusion gleaned from the research was that a noticeable change did occur in both fiscal neutrality and disparity in revenue per pupil over the time-series. A second conclusion which emerged from the research was that conflicting results with regard to the two principles of student equity were found. Fiscal neutrality standard, worsened from 1977-78 to 1985-86, whereas the degree of disparity in per-pupil revenue improved for the general student population, but not for students in the lower half of the distributions.

Observations With Regard to Fiscal Neutrality

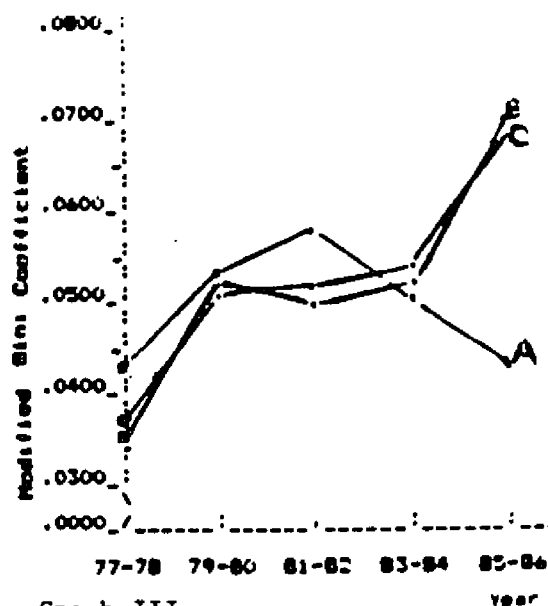
The first aspect of this study explored the effects of Louisiana's funding system on equal opportunity by measuring the degree of fiscal neutrality associated with three alternative designations of fiscal capacity--property valuation per ADM, sales tax capacity per ADM, and combined property valuation/sales tax capacity per ADM. Three relationship measures, the regression slope, an elasticity coefficient and a modified Gini coefficient, evaluated the strength of the relationship between per-pupil revenue and each of the specifications.

The findings for fiscal neutrality varied with both measures and with definition of fiscal capacity. These findings are graphically displayed in Figure 5-1. Each graph represents, by measure, the numerical data presented in Chapter IV and is re-presented here to illustrate the differences due to measure as well as the magnitude of difference attributable to capacity specification. A summary of the findings that led to the conclusion that student equity has decreased over the time period, at least when assessed by applying the fiscal neutrality standard, follows.

Figure 5-1--Three assessments of fiscal neutrality for Louisiana, by measure, for alternate years, 1977-78 to 1985-86



Graph II



Graph III

Legend

- A: Fiscal Capacity = taxable assessed property valuation per ADM
- B: Fiscal Capacity = sales tax capacity per ADM
- C: Fiscal Capacity = combined A and B

1. Per-pupil revenues were more dependent on local capacity in 1985-86 than in 1977-78, regardless of fiscal capacity measure.

2. The degree of neutrality fluctuated with the measure.

3. There tended to be greater agreement among the neutrality measures (i.e., the patterns are more closely aligned) when the capacity was defined as a combination of revenue sources upon which Louisiana districts rely. (Observe Line C on each graph in Figure 5-1).

Differences associated with measure. The patterns produced by the modified Gini coefficients over the time-series were less dynamic (lines A, B, and C in Graph III), regardless of fiscal capacity, than those patterns produced by the slope and elasticity values. Whereas little can be said here about the Gini coefficient results, other than to note a decrease in neutrality over the time period, variations between the patterns of the slope and elasticity were a likely result of the type of change to which each is sensitive.

Since the slope is sensitive to changes that do not affect the elasticity (i.e., equal proportional changes in the independent variable as well as uniform inflationary change), inflation and/or differences in assessment practices associated with property valuation

influence the slope. Decreases in the inflation rates since the early 1980s may have had some effect on the slope. Furthermore, practices associated with the administration of local property assessments may have also contributed. The Public Affairs Research Council (1984), for example, suggests that computerization of assessment systems may have decreased the need to adjust for interdistric inconsistencies. This consequence may be reflected in the results.

Property values for 1977-78, 1979-80, and probably those of 1981-82 were based on the real property assessment of 1977-78, while the values in 1983-84 and 1985-86 were based on re-evaluated real property. This fact may have partially contributed to the substantial departure from fiscal neutrality in 1981-82 and subsequent decrease in 1983-84. This departure is quite noticable with both the slope and the elasticity and somewhat evident with the Gini coefficient. Since the elasticity is only influenced by real additions (or subtractions) to either per-pupil tax capacity or per-pupil revenue, these coefficients are probably more representative of the actual changes over time in the relationship between revenues and local capacity.

Differences associated with capacity. The specified capacity appeared to influence shifts in

fiscal neutrality from assessment year to assessment year. The distance from perfect neutrality, when measured by the slope, greatly increased when property valuation was the independent variable than when either the sales tax capacity or the combined capacity was the designated variable. The values of the slope, when multiplied by 1000, represent the dollar change in per-pupil revenues for every \$1000 change in the independent variable (e.g., property valuation per ADM, sales tax capacity per ADM). The magnitude of the sales tax capacity (with mean values ranging from \$23,994 in 1977-78 to \$44,827 in 1983-84) as compared to the property base (\$7,028 in 1977-78 to \$13,928 in 1985-86) may be responsible for the greater distance from neutrality exhibited by property valuation. (See Table 4-1.)

Examination of the elasticity reinforces this idea. The pattern exhibited by the series of elasticity coefficients is similar in shape to that exhibited through the slope, but property valuation per ADM becomes the fiscal capacity demonstrating the greatest fiscal neutrality. (Observe line A in Graphs I and II.)

A second noteworthy item is the comparison of the patterns exhibited when combined capacity per ADM and sales tax capacity per ADM served as the independent variables (lines B and C in all graphs). The fiscal neutrality pattern produced when the combined capacity

served as the independent variable is similar to the pattern produced with the sales tax capacity alone. This phenomenon suggests that the magnitude of sales tax capacity per ADM may have an overriding influence on taxable assessed property valuation per ADM.

The most obvious departure from fiscal neutrality with regard to property valuation occurred in 1981-82. What were the factors which may have contributed to the this decreased neutrality? As already mentioned, re-assessment of property valuation occurred during 1982 and was at least partially responsible for the increased property valuation per ADM in the last two evaluation years. Whether the total increase was a result of increased valuation by the assessor, increased sales of property, decreased exemptions on property, and/or greater activity in ad valorem taxation relative to business is not discernable with the information and analyses attempted in this study, but the investigation of these factors as probable causes is certainly worthy of further consideration.

The substantial departure from neutrality observed with property valuation apparently also influenced the results for the combined capacity specification. Whereas the findings for sales tax capacity indicate an increase in neutrality in 1981-82, the combined

capacities somewhat mirror the results produced through use of property valuation as the capacity.

Changes in the revenue per pupil also influence the relationship results. In 1981-82, sales tax capacity per ADM increased substantially (mean value of \$43,184) over that of 1979-80 (\$32,834). Even if local taxing rates remained constant, such an increase in this capacity would provide substantially greater local funds. In addition, the increase in state funding which occurred may have had some impact. Even though the state's share of the state-local funding did drop in 1981-82 (from 61.47% in 1979-80 to 60.81%), the state still provided more per-pupil dollars than previously.

Observations With Regard to Equal Treatment of Equals

Equal treatment of equals was assessed by measuring the degree of disparity in revenue per pupil for each of five evaluation years using the coefficient of variation (CV), the Federal Range Ratio (FRR) and the McLoone Index (MI). For the first two measures, disparity in per-pupil revenue, or distributional inequality, lessened from 1977-78 to 1985-86, resulting in greater equality with regard to equal treatment of equals. However, when the per-pupil revenue distribution below the median pupil was assessed, greater inequality with

regard to equal treatment of pupils in the state was documented (See Table 4-9).

Factors contributing to the results can be attributed to measure as well as changes in district and state characteristics from year to year. Each measure reflected the disparity present in a specified portion of the revenue distribution for any given evaluation period. The CV standardized the data and included all per-pupil revenues in the distribution, whereas the FRR was not standardized and included only the middle 90% of the per-pupil revenue distribution. The MI also was not standardized and, furthermore, included only the lower 50% of the distribution.

A summary of the findings supporting the conclusion that student equity, when represented by the degree of dispersion in revenue per ADM, generally increased over the time period follows.

1. The CV, while registering fluctuations toward and away from equality from year to year, was lower in 1985-86 than in 1977-78.

2. The MI, which also registered fluctuations toward and away from equality over the time period, showed less equality in 1985-86 than in 1977-78.

3. The FRR results represented a clear trend toward decreasing inequality in the distribution of per-pupil revenue.

Why did the FRR results indicate a clear trend toward equality while the patterns produced by other measures were more sporadic? Since the FRR is based on the middle 90% of the revenue distribution, the extremely low and extremely high per-pupil revenues were not included in the measure. The FRR analysis of the 1985-86 distribution, for example, excluded per-pupil revenue ranging from \$2,802 to \$4,307 at the upper end and per-pupil revenue ranging from \$1,748 to \$2,010 at the lower end.

When the raw data was examined, the per-pupil revenue for students in Cameron, Jackson, West Feliciana, and St. Charles were consistently excluded for at least four out of five evaluation years. These districts constituted a portion of the districts falling into the upper 5th percentile of the per-pupil distributions. This information has implications for fiscal neutrality as well. With the exception of Jackson, these districts had either high property valuation or sales tax capacity (or both) and/or had access to local land lease revenues.

The per-pupil revenue for students in Grant, Allen, and Avoyelles school districts (representing a portion of the districts educating students in the lower 5th percentile of per-pupil revenues), was generally excluded in the FRR analysis. These districts had low property and sales tax potential and little or no access to rental or land lease revenue.

Why did the the coefficient of variation (CV) results fluctuate from year to year? When the entire distribution was subject to analysis, the values at the upper and lower ends increased the entire range which in turn affected the mean. A change from less variability, for example, to greater variability meant that the school district revenues per pupil became less clustered around the mean value. Hickrod (interview, June, 1988) suggested that activity at the extreme ends of the distribution may contribute to the fluctuations experienced by the CV. Table 5-1 displays the ranges for the upper and lower five percentiles for each evaluation year. Several noteworthy observations can be made about the values at the upper and lower ends of the per-pupil distributions.

First, by 1985-86, the range in the upper 5% of the per-pupil revenue distribution that was excluded from the FRR analysis was nearly twice the range subjected to

TABLE 5-1

UPPER AND LOWER RANGES OF PER-PUPIL
REVENUE DISTRIBUTIONS, ALTERNATE
SCHOOL YEARS, 1977-78 TO 1985-86

Year	Minimum Value	Value of 5th Percentile	Lower Range	Maximum Value	Value of 95th Percentile	Upper Range
1977-78	\$ 641	\$ 796	\$155	\$1956	\$1317	\$ 639
1979-80	1180	1226	46	3094	1790	1304
1981-82	1640	1720	80	4239	2496	1743
1983-84	1679	1798	119	5041	2588	2453
1985-86	1748	2010	262	4307	2802	1505

analysis. Furthermore, the range in per-pupil revenue for any given evaluation year was substantially less for the lower 5% of the distribution than for the upper five percent.

Second, the greatest difference among parishes in the lower 5% was \$262 in 1985-86 whereas the greatest difference among parishes in the upper 5% was \$2,453 in 1983-84. Additionally, the range for the upper 5% never fell below \$639 (in 1977-78) whereas the range for the lower 5% of the distribution was as low as \$46 (in 1979-80). This wide variance could influence the degree of equality shown by the CV for any given year and may have contributed to the fact that equality decreased when the FRR indicated an increase in equality.

Furthermore, the year-to-year fluctuations may be partially attributable to the wide variance in ranges from year to year at the upper end of the distribution. For example, the range doubled from 1977-78 to 1979-80 and then grew steadily wider through 1983-84 (to \$2,453) followed by a decrease to \$1,505 in 1985-86. The impact of this information coupled with the analysis results suggests that activity at the upper and lower ends of revenue distributions might need further analysis.

What factors might account for fluctuations in the McLoone Index (MI)? The MI, assessing only the spread

in the per-pupil revenues of the lower half of the distribution, varied by as much as three and one-half percent and registered a decrease in equality over the time-series. Berne and Steifel (1984, p.277) suggest that movement toward or away from the median of districts with a large number of students may affect the index. An examination of the data revealed two factors which may have had an impact on fluctuations. In 1977-78, when equality was greatest (MI of .9138), the lower half of the per-pupil distribution included only 36 of the 66 school districts. The median pupil was a part of the student population of Oachita school district (ADM of 19,043) in which the per-pupil revenue was \$1096. Orleans school district (ADM of 89,060 and the largest school district in the state) was included in that distribution, but other large districts, such as Jefferson (67,914), Caddo (48,158), and East Baton Rouge (67,769) were not.

For the years 1981-82, in which distributional inequality was greatest (MI of .8793), the lower half of the per-pupil distribution was enrolled in 45 of the 66 districts. The revenue of the median pupil in Caddo school district (ADM of 44,496) was \$2,143. In this case, the distribution did not include Orleans school district (ADM of 82,049), nor did it include the school

districts of Jefferson (58,334) or East Baton Rouge (59,342).

In 1985-86, when the MI reflected nearly the same degree of inequality as that of 1981-82, the lower half of the per-pupil distribution was again enrolled in 45 of the 66 school districts. This time, the median pupil was a part of the student population of Vermilion school district (ADM of 9,785), with a revenue per pupil of \$2,483. Again, none of the larger school districts were included in the distribution.

Whether these factors, (i.e., the changes in number of districts and the inclusion of a very large school district in one analysis but not the others) affected the changes in the McLoone Index from one period to the next is open to speculation. Further analysis of factors affecting this specific index would be required.

Other Factors With a Possible Effect on Student Equity

The aforementioned attempts at identifying specific factors affecting results of this assessment of student equity are speculative at best. It is likely that a combination of political, economic and demographic factors have affected the equity results obtained for both equal opportunity and equal treatment of equals.

For example, the legislative decisions to only partially fund the Minimum Foundation Program (in 1979-

80 and in 1983-84) and to maintain the formula at 1984 levels may have impacted the results in 1985-86. School finance research has indicated that higher levels of state support usually result in higher degrees of equality, whereas increased funding at the local level can decrease equality. Louisiana school districts, with their history of reliance on relatively high levels of state support, did in fact increase local support by at least 3% in response to decreases in state aid.

Economic factors such as fluctuations in the state's business economy and reductions in oil and gas dollars may have contributed to the erosion of a traditionally high state support level. Louisiana's total general revenues increased from 1979 through 1981 but then slowed and even reversed themselves by 1983 (as measured by percentage change from year to year). In fact, the state's percentage of state-local support dropped from 64.72% in 1977-78 to 59.94% in 1985-86.

On the other hand, local sales tax potential per ADM increased from 1977-78 to 1985-86, with a substantial increase from 1977-78 to 1983-84. Although this growth lessened in 1985-86, overall increased sales tax potential may have contributed to the increased local funding of schools.

An additional feature that may have affected the equity assessment was the change in average daily

membership over the time period. Changes in ADM can impact on the per-pupil value of the capacity measures as well as the value of revenue measures. School year 1983-84 marked the turning point in decreasing public school enrollment in Louisiana. Whereas average daily membership decreased from 1977-78 to 1983-84 (from 815,710 to 761,345), it showed an increase of 6,294 ADM in 1985-86.

It is the combination of changes in ADM and changes in total value of other variables (e.g., district property valuation, sales tax capacity, or even per capita income) that might affect distributional equality as well as fiscal neutrality. For instance, an increase in ADM in districts showing decreased fiscal capacity coupled with decreases in ADM in districts showing increased fiscal capacity may have multiple effects on equity assessment.

Conclusions Associated With the Secondary Analysis

An exploration of the interrelationship among local sources of revenue was guided by the following question.

For those school districts receiving 1% or more of state-local funds from local rental, land-lease (RLL) revenue, (a) what is the interrelationship among RLL revenue, property tax revenue and sales tax revenue for 1977-78, 1981-82, and 1985-86, and (b) what effect, if any, did changes in RLL revenue have on subsequent reliance on property or sales bases?

The interrelationship among local sources of school revenue was explored by determining the percentage change between consecutive evaluation periods with regard to dependency on revenues generated through taxing both property and sales as well as comparative reliance on RLL revenue.

The varied findings (summarized in Tables 4-14 and 4-15) associated with this question provided no clear trends, but, as expected with an exploration of data, did suggest further questions. For instance, should the state provide revenues to districts which are not utilizing the local capacities available? The results indicated that over the course of the nine years studied, all districts except Cameron placed some reliance on sales taxes as a source of local school revenue. Yet, Cameron school district, without employing a sales tax, registered the highest per-pupil revenue in the state for four of the five evaluation years. Furthermore, state contributions accounted for about 35% of Cameron district's school revenue in 1985-86.

Should the state correct for local RLL revenue? There was no concensus among the 22 parishes included in the secondary analysis about the rank of per-pupil revenue. Although the two districts with high RLL revenue (Cameron and Vermilion) were in the upper part

of the distribution, other high RLL districts were ranked mid-range, and yet others (e.g., Madison, West Baton Rouge, Acadia) were included in the lower 5% of the revenue distributions. If state revenue to local districts receiving RLL revenues were to be restricted, should criteria be developed that would exempt parishes with low per-pupil revenue? If yes, what criteria would be employed in granting exemptions? Such questions require a more comprehensive analysis of the question of the interrelationship of local revenue sources--especially in light of the present administration's emphasis on greater local financial support of education.

This study generally concluded that the method by which Louisiana funded its public schools from 1977-78 to 1985-86 decreased equal opportunity, as assessed by measures of fiscal neutrality, and generally increased the equal treatment of equals, as assessed by measures of disparity in revenue per pupil, with one important exception--the equality associated with students ranked in the lower half of the per-pupil revenue distribution has decreased over the evaluation period. Furthermore, the relationship between revenue and local capability, which ideally should be neutral, was greater when sales tax potential was the designated local capacity measure (at least when assessed through the elasticity and Gini

coefficient). This study also concluded that the interrelationship among local revenue sources for the evaluation period indicated no clear trends.

Implications and Limitations

The above conclusions, taken in tandem with the possible plausible factors which may have impacted the results associated with measures of student equity, suggest several implications for practice and for further research.

Implications for Practice

There are at least three implications with respect to the present funding system used in Louisiana. The first is associated with the underlying concept of the Minimum Foundation Program (MFP). The MFP, based upon the idea of leveling up to a minimum revenue per pupil, is well entrenched in Louisiana. The McLoone Indices can provide useful information to policy makers interested in maintaining and/or improving the Minimum Foundation Program. Since the indices suggest that the present funding system does not consistently produce a constant "leveling up" to the median, interested policy makers may want to use this measure to continue to monitor progress as well as evaluate future proposals aimed at improvement.

Second, sales tax potential should be considered as a factor in the MFP. The results of this study support the prediction put forth by Alexander et al. (1980) that increased use of sales tax potential as a local revenue source through the 1980s would influence equality. While this study did look at the degree of fiscal neutrality associated with the combined property and sales tax potentials, no effort was made to determine methods by which the sales tax capacity could be integrated into the MFP formula. The literature review presented several state plans that include sales tax potential (e.g., Virginia's use of an index including sales revenue). Policy makers interested in investigating alternative methods of including the sales tax potential in the Louisiana funding formula do have other state models upon which to rely.

Approximately 50% of local funds come from utilizing the sales tax in Louisiana. Including this revenue potential in the MFP, along with a reasonable measure of the property base, may be a step forward in producing a state formula that contributes to a more accurate representation of local capacity, or ability-to-pay.

Third, some provision for including RLL revenue in the MFP should be considered. The practice of charging back 50% of local revenue derived from 16th section

property to local districts was abolished by Act 619 in 1975. A plan that incorporates a portion of RLL revenue, especially for parishes at the upper end of the per-pupil distribution, should again be considered as a measure of local ability-to-pay. For those districts with lower property and/or sales tax capacities, (e.g., East Carroll, Richland) use of a limitation provision, such as a circuit breaker, could be used to exempt their inclusion of this additional source of local revenue as a measure of local capacity.

There are also implications for judicial inquiry. Two challenges to the state funding system have both been defeated on the rationale that the MFP was an equitable funding system. When fiscal capacity, however, is defined as the sales tax capacity, the results indicate a less neutral fiscal relationship than when local capacity is defined as property valuation per pupil.

The results of this study suggest continuous monitoring of policy changes. Changes in the economic and demographic variables over the nine-year period of the study were not accompanied by changes in the state funding system, and a growing inequality over that time period is now observed. The present emphasis on restructuring education in Louisiana (e.g., teacher internship programs, career model options, and shifting

greater economic responsibility to local levels) is likely to have a significant impact not only on equity considerations, but on efficiency and adequacy considerations as well.

In conclusion, this study suggested that the education of the individual student has become more dependent on local district capacity since 1977-78, while the spread in the distribution itself has generally decreased except for the students making up the lower half of the per-pupil revenue distributions. Possible actions that might alter the shift toward greater inequality include: (a) changing the funding formula altogether, or at least revising the formula through limitations such as tax ceilings and floors, and (b) developing an active monitoring system of programs and policies that assessed both complexity of implementation and the probable effects. Continuous monitoring would likely pinpoint shifts in inequality resulting from changes in policy.

Limitations and Implications for Further Research

Further research is suggested in relation to the following limitations which arose through the use of a conceptual framework requiring choices in principles, variables and measures.

Several limitations were imposed through the choice of principles assessed. The vertical equity associated with Louisiana's large vocational and special education population (i.e., the unequal treatment required for students with unequal needs) was not assessed, although revenue intended for their basic education was included. A thorough assessment of vertical equity is recommended as an additional contribution to a comprehensive equity assessment.

In assessing the equal opportunity principle, several restrictions related to both dependent and independent variables were imposed. This study limited the dependent variable to state-local revenue adjusted to eliminate the impact of funds targeted to special populations. Studies utilizing other financial variables (e.g., current expenditure per pupil, other combinations of state and local revenue, federal revenue) are recommended. Furthermore, studies using non-financial variables (e.g., the ratio of teachers to students and/or the ratio of district racial groups) are also suggested.

This study also limited the specifications for fiscal capacity (i.e., the independent variables). First, taxable assessed property valuation, defined as ten percent of the market value of property less homestead exemptions, served as the per-pupil property

base. This designation may not represent the true fiscal capacity of real property. Second, the definition of local sales tax capacity allowed for local exemptions to sales which may have mildly misrepresented the true local sales tax capacity. Future studies using additional specifications of local capacity (i. e., income per pupil or per capita, total property valuation per pupil (full market value with no exemptions), or total sales tax capacity (no exemptions) are recommended. Moreover, exploration of comprehensive combinations of local capacity to support schools would certainly contribute to the knowledge base, both for Louisiana and for school finance in general.

A second major limitation was the use of the "unconditional" fiscal neutrality standard. By assessing the simple relationship between capacity and expenditure, no regard was given to taxpayer effort. It is recommended that future studies attempt assessments that control for local effort.

Whereas this study's use of current, unadjusted dollars might be considered a limitation, the school finance literature generally contends that, in studies over time, similar patterns of equity result regardless of measure, but that the distance from "true equity" is greater with current dollars. For research centered on distance from equity, rather than changes in equity over

time, a replication of this study using constant dollars may add a further dimension to the findings.

Berne and Stiefel (1984) suggest that a comprehensive evaluation should include weightings for regional cost differences. The formulas used in this study do not weight costs by region. If and as indicators which have application to educational costs become available in Louisiana, it is recommended that future studies include an adjustment to dollars across school districts.

In addition to limitations associated with principles and variables, a third area in which limitations were imposed was that of measurement. This study used only three of several accepted measures for each of the equity principles. Application of other statistical analyses would extend the meaning associated with student equity. A multiple regression analysis identifying industrial, commercial and residential property tax bases as independent variables would be especially applicable to Louisiana (see Ladd, 1975 and Feldstein, 1975, for examples; Garms, 1979).

Lastly, this study utilized the pupil unit of analysis--mainly because a major tenet of student equity is that the education of each individual student is of prime importance. Nevertheless, legislators in particular are especially interested in knowing how one

district differs or compares to another. Thus, a district unit of analysis may be of specific importance to policymakers.

Summary

This chapter has presented, in addition to a summary of the study, a discussion of possible factors that may have affected the results and ultimate conclusion that the Louisiana funding system has not contributed to the advancement of equity over the assessment years. Implications and recommendations with regard to practice and research have been offered.

The once-popular notion of equitable funding of schools has been overshadowed by an emphasis on the concept of excellence--and specifically the components of accountability and efficiency--in schools in recent years. Perhaps a truly excellent public school may well be one in which not only accountability and efficiency predominate, but one in which equality in both treatment and opportunity is recognized as an integral part.

Although some tradeoffs among values may be unavoidable, an awareness and an emphasis in those areas in which efficiency and equity complement one another may enhance the concept of an excellent school (for examples, see Geske, 1983). Without this emphasis,

segments of the school population may be left unnecessarily wanting.

A conscious awareness of the financial implications for students is recommended as the restructuring of education (which includes changes in the funding formula) in Louisiana is advanced. This awareness can be achieved through careful, on-going monitoring of the effect of political decisions affecting not only the adequacy of school funds but also their efficient and equitable use.

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APPENDICES
Appendix A.

Selected Evaluation Studies of School Finance Systems in the United States.

Author(s)	States Examined	Years Studied	Overall Finding
Brown et al. (1978)	All 50	1970, 1975	--Overall expenditure inequality across country basically remained unchanged from 1970 to 1975.
Odden, Berne, and Stiefel (1979)	All 50	1973-1977	--Mixed results with one state consistently ranking in the top quartile and three states consistently ranking in the bottom quartile of distributions for all six measures used.
McLoone, Golladay, & Sonnenberg (1981)	All 50	1969/70, 1973/74 1976/77	--Overall expenditure inequality across country basically remained unchanged from 1969/70 to 1976/77.
Odden and Augenblick (1981)	All 50	1977	--Mixed results with 8 states consistently ranking in top third and 7 states consistently ranking in the bottom third of the distributions for all four measures used.
Hickrod, Chaudhari, & Lundeen (1980)	IA IL IN	1972/73-1978/77 1972/73-1978/79 1972/73-1976-77	--Reforms promoted greater "unconditional" fiscal neutrality in all three states.
Carroll & Park (1983; also see 1979c; Carroll, 1979a, 1979b, 1982)	CA FL KS MI NM	1970/71-1976/77 1972/73, 1975/76 1972/73-1974/75 1971/72-1975/76 1972/73-1975/76	--Reforms did not reduce expenditure inequality, but somewhat improved fiscal neutrality, and also promoted greater tax equity.
Alexander & Shiver (1983)	FL	1970/71 1972/75 1974/75 1976/77 1978/79 1980-81	--The state's major reform in 1974 did not improve fiscal equalization across school districts.

App. A continued

Author(s)	States Examined	Years Studied	Overall Finding
Cronk & Johnson (1983)	PA	1977/78-1979/80	--State's major reform in 1977 did not produce a more equitable school finance system.
Goertz (1983)	NC	1975/76-1981/82	--State aid to education doubled in recent years, but disparities in per pupil expenditures have not narrowed significantly. Similarly, local property wealth remains a major determinant of school district spending. Initial equity gains after reform in 1976 are being gradually eroded.
Hickrod, Chaudhary, & Hubbard (1983)	IL	1973-82	--Illinois reduced expenditure inequality and improved wealth neutrality from 1975 to 1977, but much of the gain during this period was lost from 1977 to 1983.
Jones & Salmon (1983)	VA	1973/74 1974/75 1980/81	--The state has actually lost ground in progress toward its school finance equity goals since its major reform was implemented in 1974/75.
King (1983)	MT	1973/74 1975/76 1981/82	--The state utilizes an equitable school finance formula and the most recent major change in 1974 has also resulted in a continuation of progress toward financial equalization across school districts.
Krupey & Hopeman (1983)	MN	1972/73 1978/79 1981/82	--Following major reform in 1971, the state made progress for seven years in reducing revenue disparities, tax rate disparities, and in improving fiscal neutrality. Examination of data for 1981/82, however, discloses revenue disparities are increasing and the system is becoming less fiscally neutral.

App. A continued

Author(s)	States Examined	Years Studied	Overall Finding
Morgan (1985)	RA	1978-1983	--The state's school finance system became less equitable following the 1979 reform.
Williams (1983)	RE	1971/72-1981/82	--School finance equity improved relatively little from 1971/72 to 1981/82.
Cohn (1984)	SE	1976, 1982	--There was definite improvement in school finance equity from 1976 to 1982.

Key: COV = Coefficient of Variation

FRR = Federal Range Ratio

GCD = Gini Coefficient

ICI = McLoone Index

PVA = Permissible Variance

RAN = Range

RDR = Relative Deviation from the Median

REN = Restrictive Range

TCO = Theil Coefficient

WE = Wealth Elasticity

Source: Cohn, Elchanon and Geske, Terry G. (forthcoming).
Economics of Education: Cambridge: Ballinger Press

Appendix B

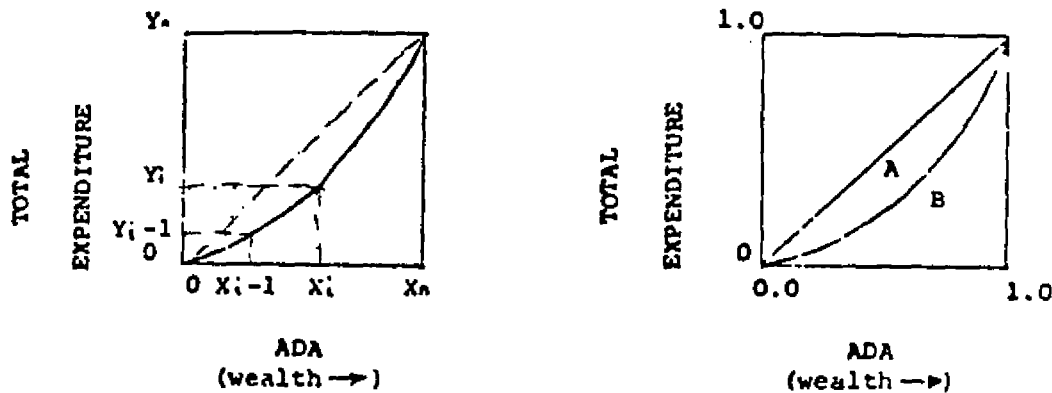
FISCAL NEUTRALITY, AS MEASURED BY THE CORRELATION,
 USING THREE SPECIFICATIONS OF FISCAL CAPACITY
 PER ADM, ALTERNATE SCHOOL YEARS,
 1977-78 TO 1985-86

=====					
Specified	Correlation for School Year				
Fiscal	-----				
Capacity	1977-78	1979-80	1981-82	1983-84	1985-86

Property					
Valuation					
Per ADM	.3295	.3069	.7486	.4859	.5724
Sales Tax					
Capacity					
Per ADM	.4641	.5547	.7022	.6466	.6228
Combined					
Capacity					
Per ADM	.4698	.5308	.7259	.6214	.6640
=====					

COMPUTATION OF GINI COEFFICIENT

The districts are sorted in ascending order of wealth per pupil. The cumulative proportions of pupils in the districts are represented by the horizontal axis and the cumulative proportions of total operating expenditures accounted for by these districts are represented by the



vertical axis. The curve thus plotted would be a straight line if the operating expenditures per pupil were the same in all districts. A sagging curve represents lesser expenditure in poorer districts. The measure of this inequality as defined by Gini Coefficient G is given by the formula:

$$G = \frac{\text{Area A}}{\text{Area (A+B)}}$$

or after further simplification

$$G = \frac{0.5 - \text{Area B}}{0.5} \quad (1)$$

$$= 1 - 2\text{Area B}$$

Area B is the area under the curve and if n is the number of districts, and

X_i = cumulative proportion of ADA for the i th district

Y_i = cumulative proportion of S for the i th district

$$\text{Then Area B} = \sum_{i=1}^n \frac{(x_i - x_{i-1})(y_{i-1} + y_i)}{2}$$

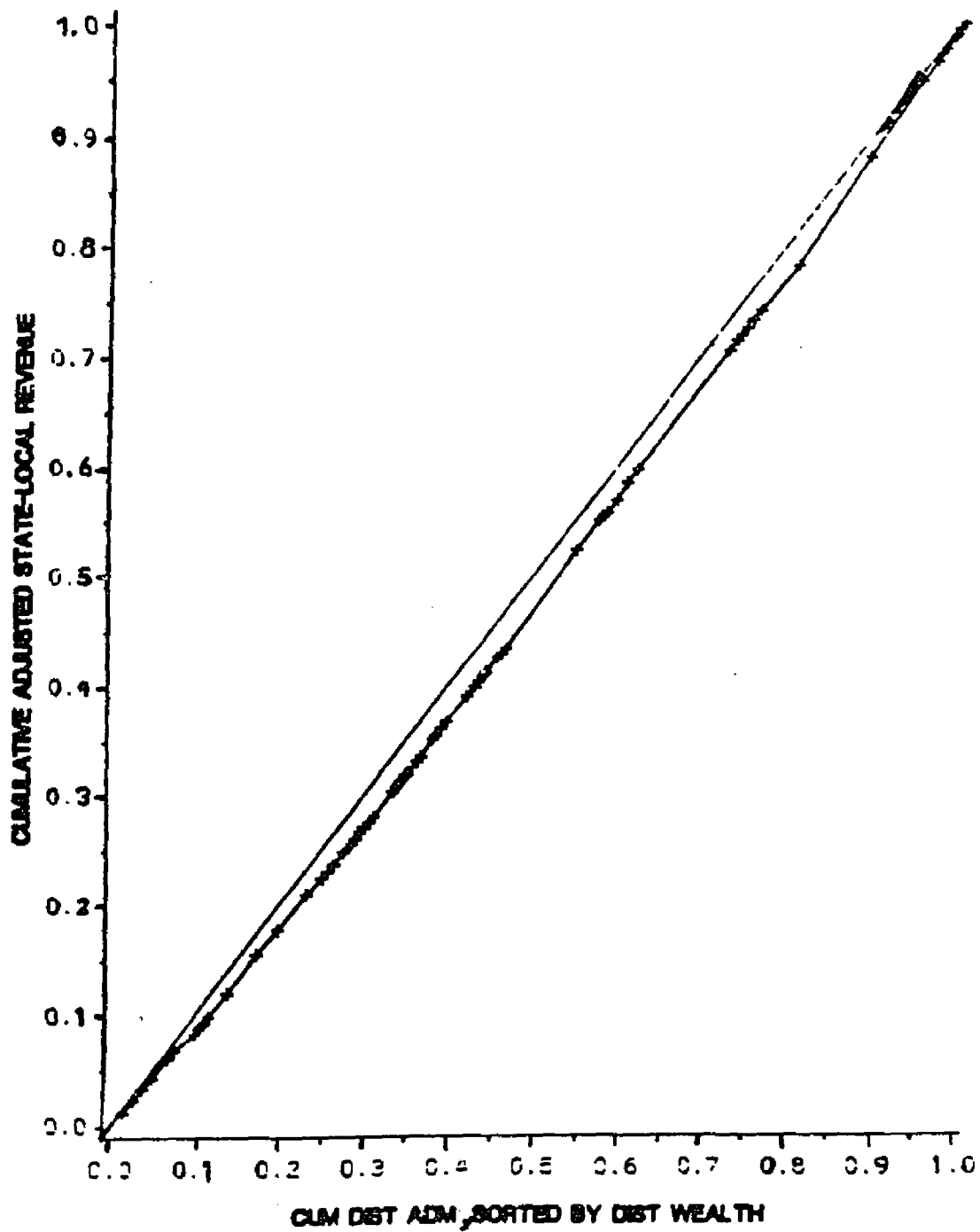
$$\begin{aligned} \text{or 2 Area B} &= \sum_{i=1}^n (x_i y_{i-1} - x_{i-1} y_{i-1} + x_i y_i - x_{i-1} y_i) \\ &= (x_1 y_0 - x_0 y_0 + x_1 y_1 - x_0 y_1 \\ &\quad + x_2 y_1 - x_1 y_1 + x_2 y_2 - x_1 y_2 \\ &\quad + x_n y_{n-1} - x_{n-1} y_{n-1} + x_n y_n - x_{n-1} y_n) \\ &= (x_2 y_1 - x_1 y_2) + (x_3 y_2 - x_2 y_3) + \dots \\ &\quad + (x_n y_{n-1} - x_{n-1} y_n) + x_n y_n \\ &= \sum_{i=2}^n (x_i y_{i-1} - x_{i-1} y_i) + 1 \quad (2) \\ &= 1 - \sum_{i=2}^n (x_{i-1} y_i - x_i y_{i-1}) \end{aligned}$$

substituting the value of area B in eq 1

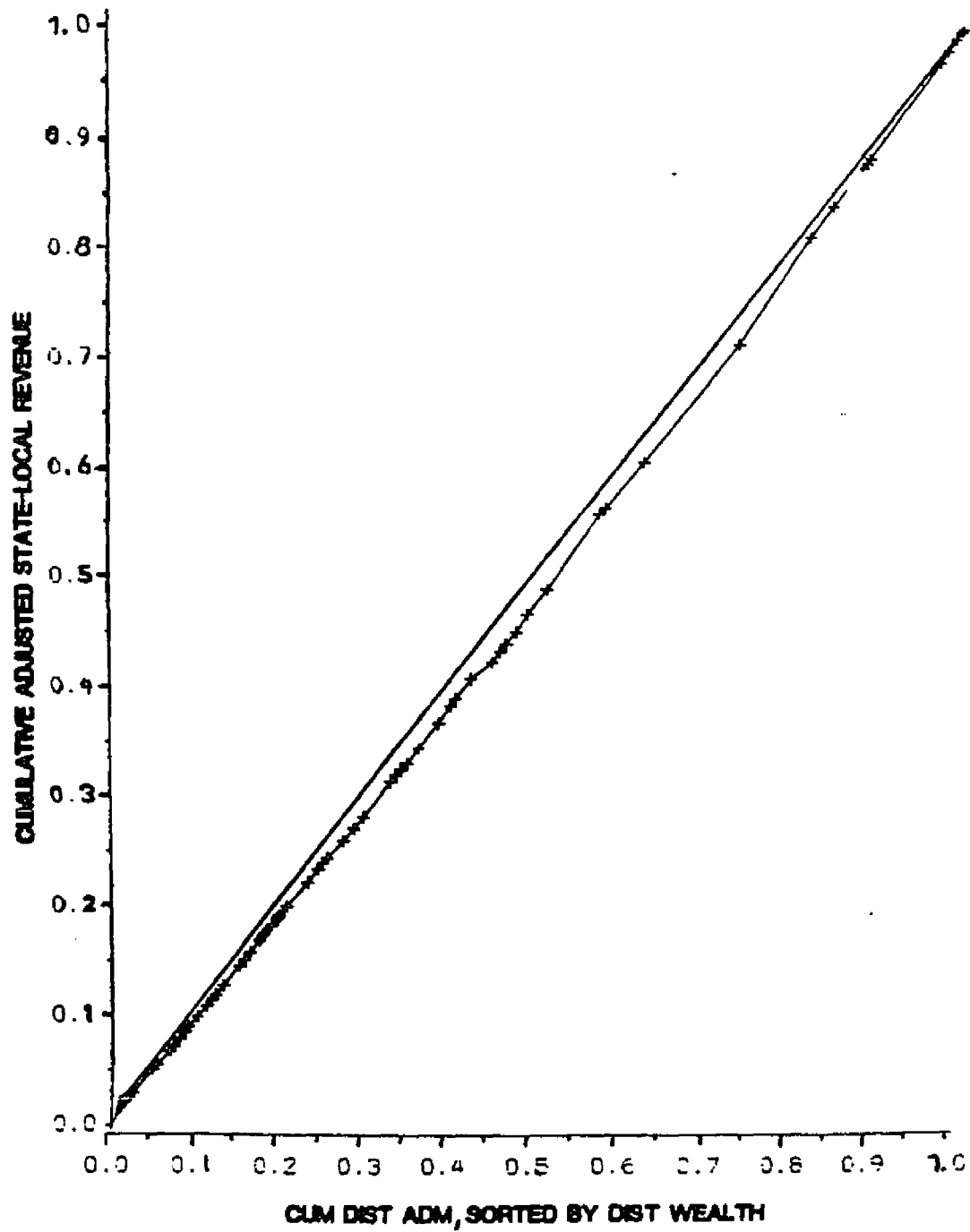
$$G = \sum_{i=2}^n (x_{i-1} y_i - x_i y_{i-1}) \quad (3)$$

Source: Hickrod, G. A., Chaudhari, R. B. and Hubbard, B. C. 1985
 Revision. The Rise and Fall of School Finance Reform in Illinois.
 Normal IL: Center for the Study of Educational Finance, Illinois State
 University.

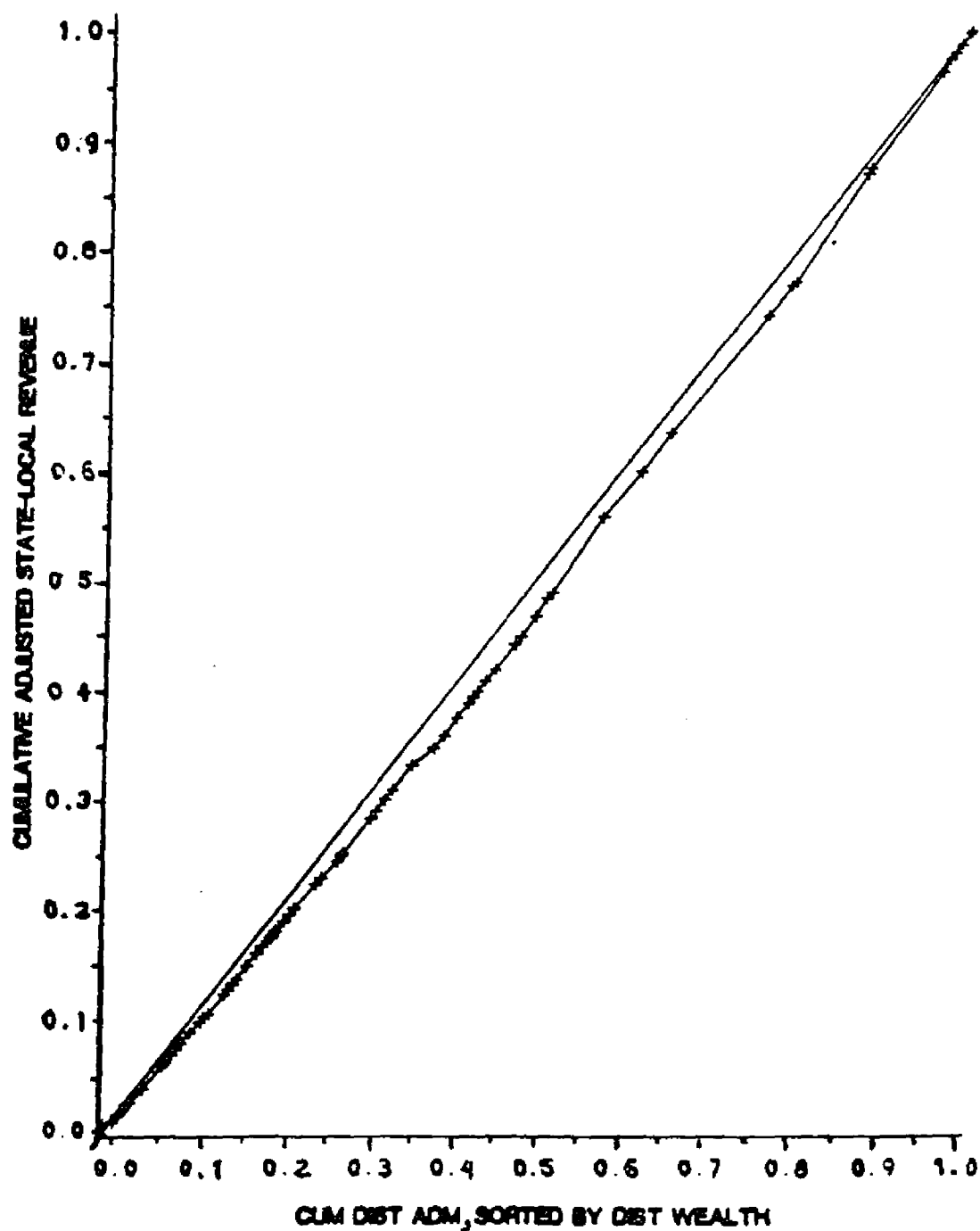
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND PROPERTY VALUATION PER ADM, 1977-78



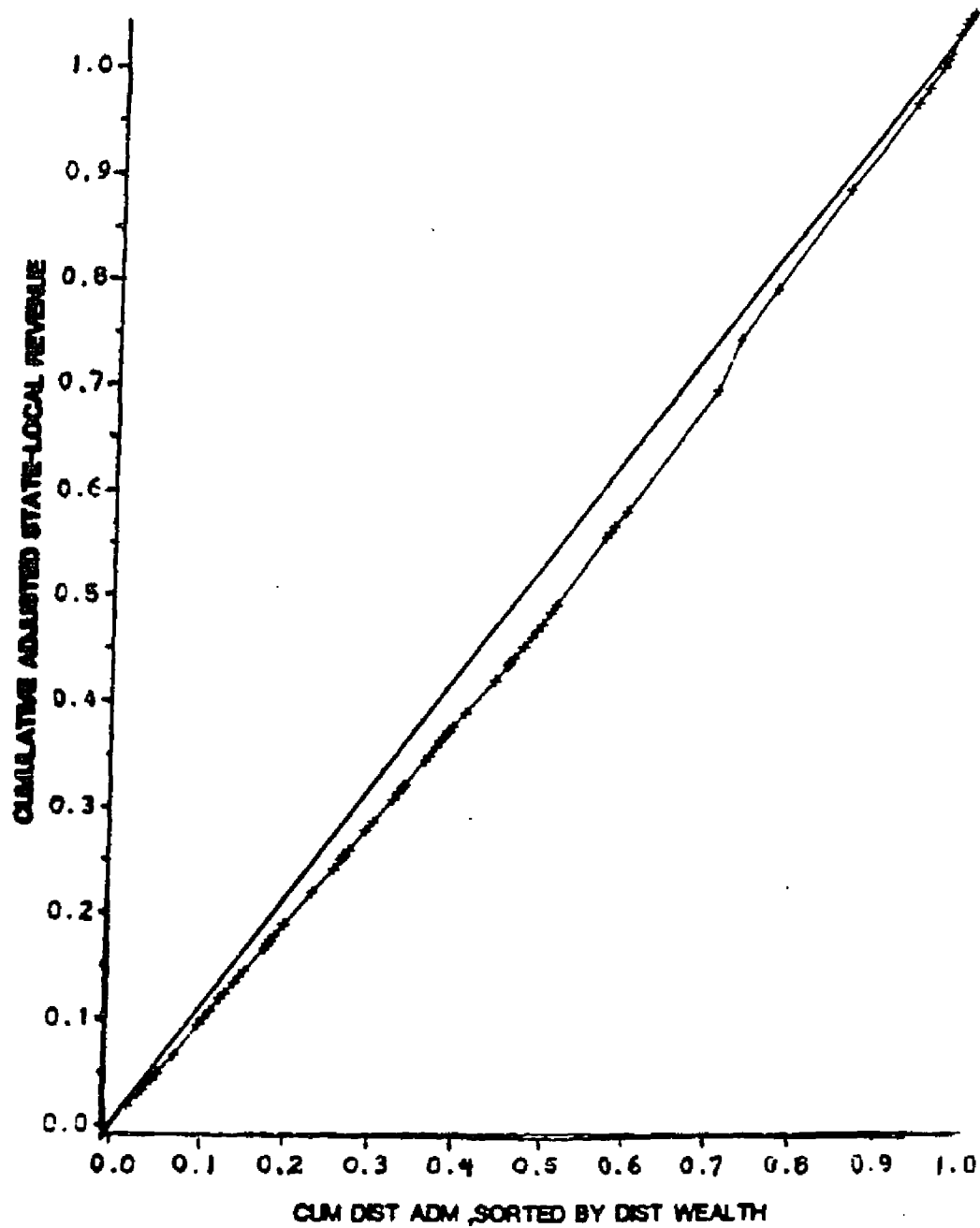
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND SALES BASE PER ADM, 1977-78



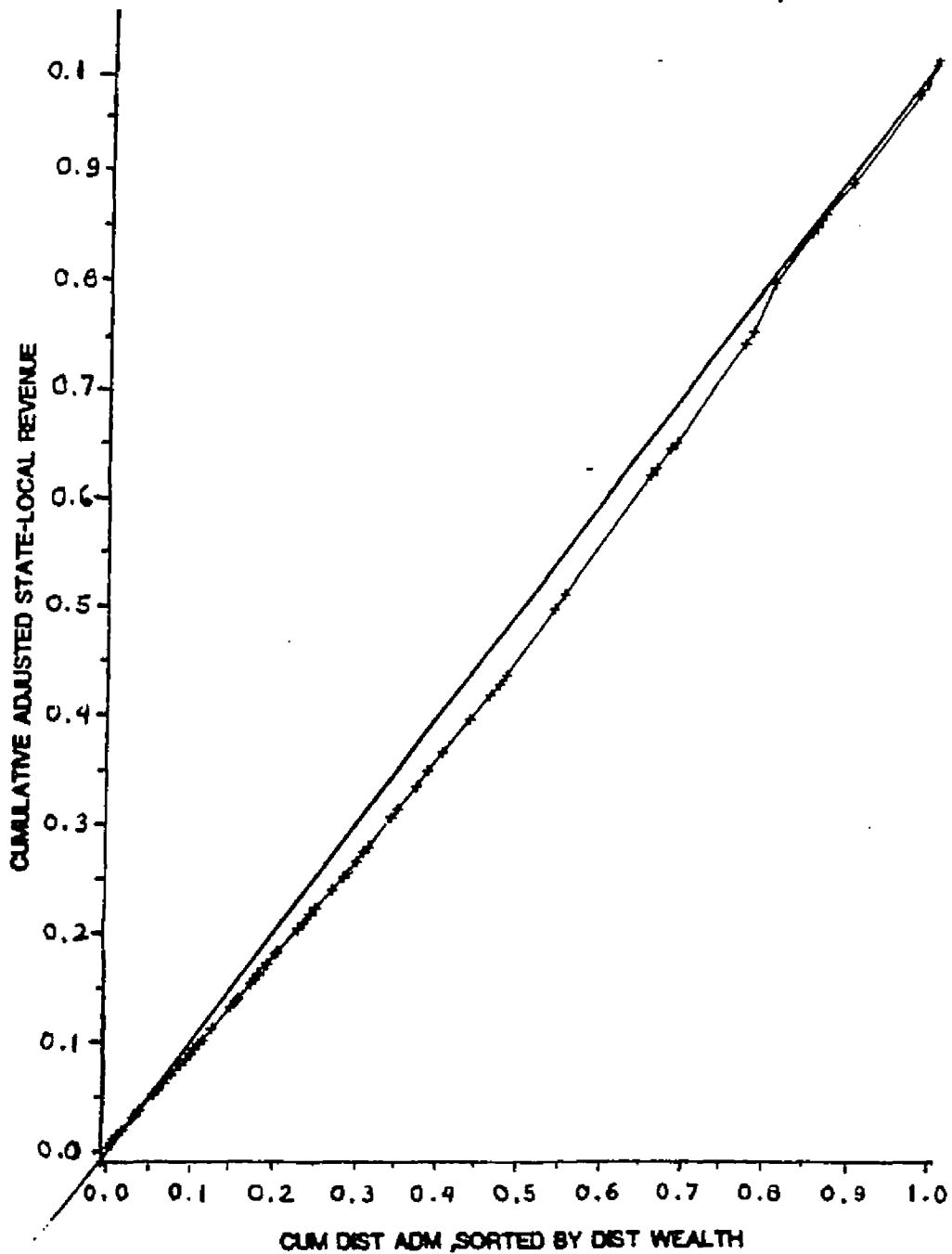
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND COMBINED PROPERTY VAL AND SALES BASE PER ADM,
1977-78



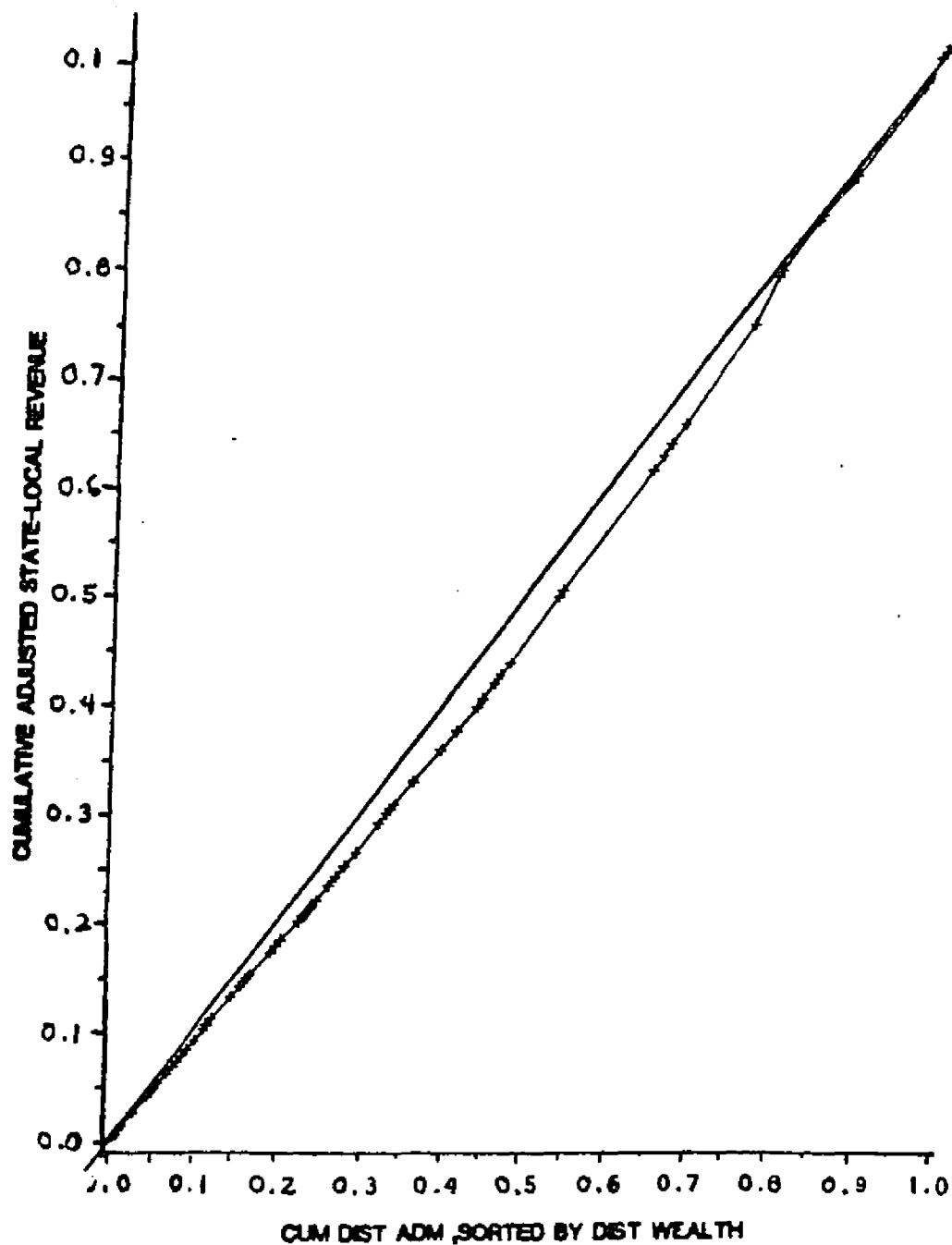
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND PROPERTY VALUATION PER ADM ,1979-80



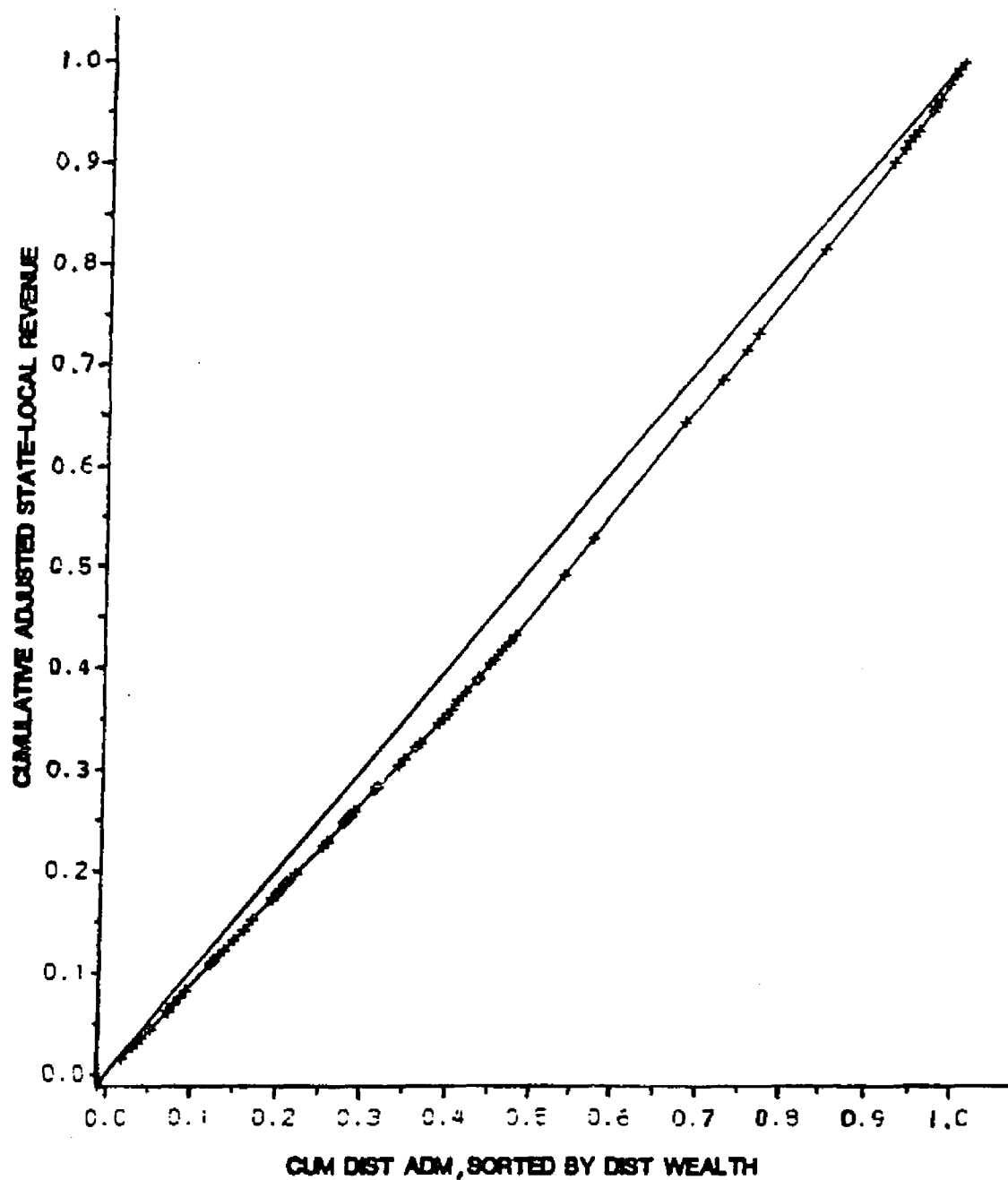
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REVENUE AND SALES BASE PER ADM ,1979-80



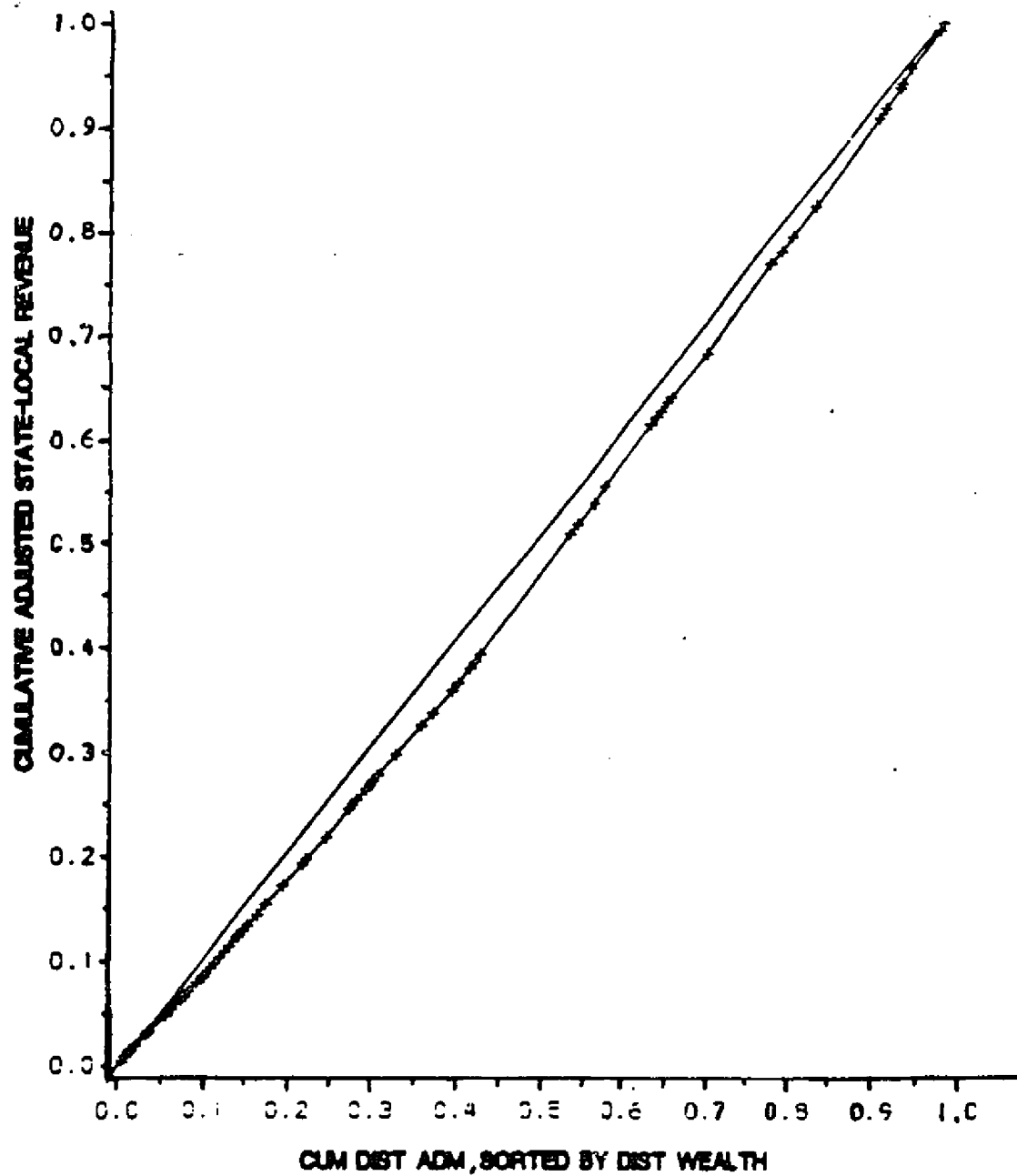
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND COMBINED PROPERTY VAL. AND SALES BASE PER ADM., 1979-80



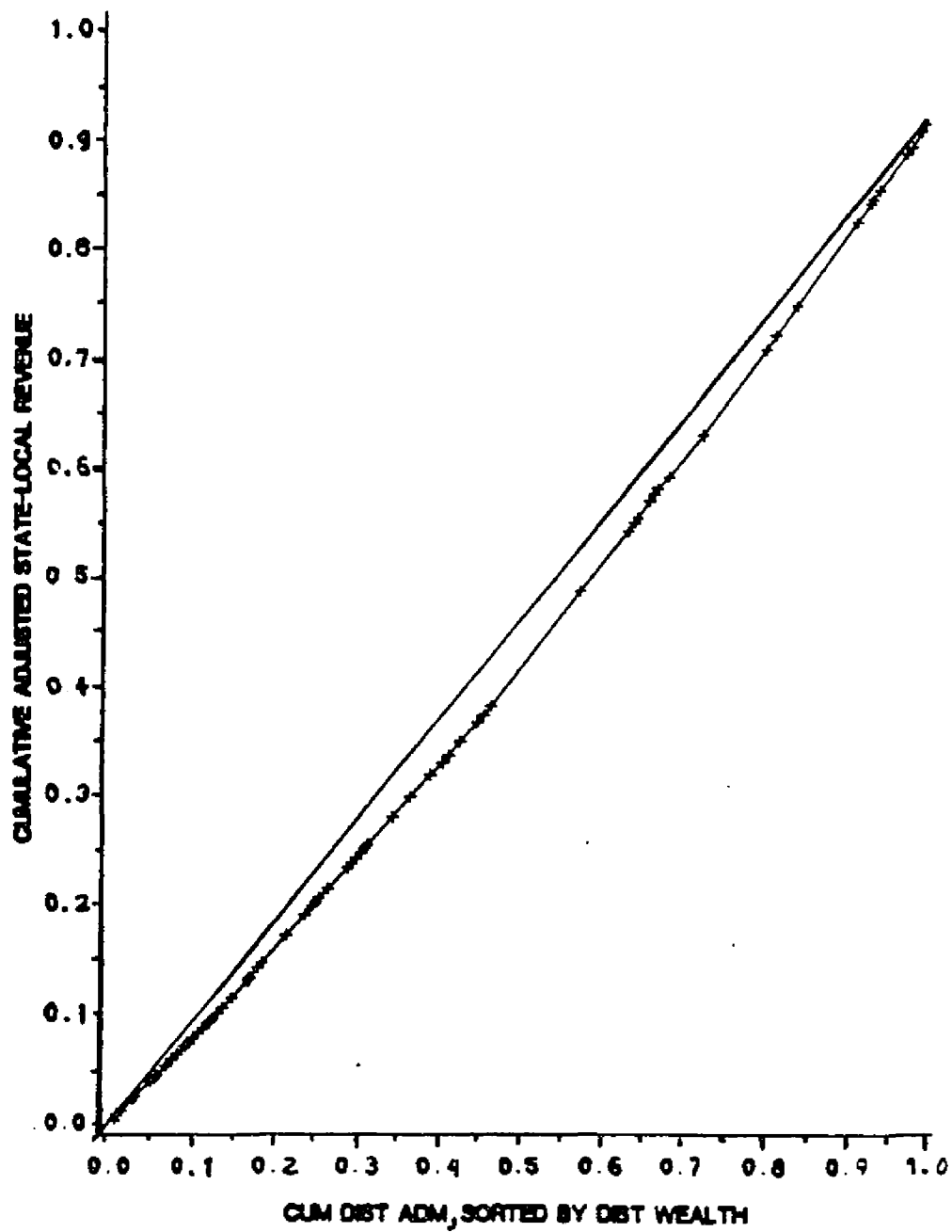
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND PROPERTY VALUATION PER ADM, 1981-82



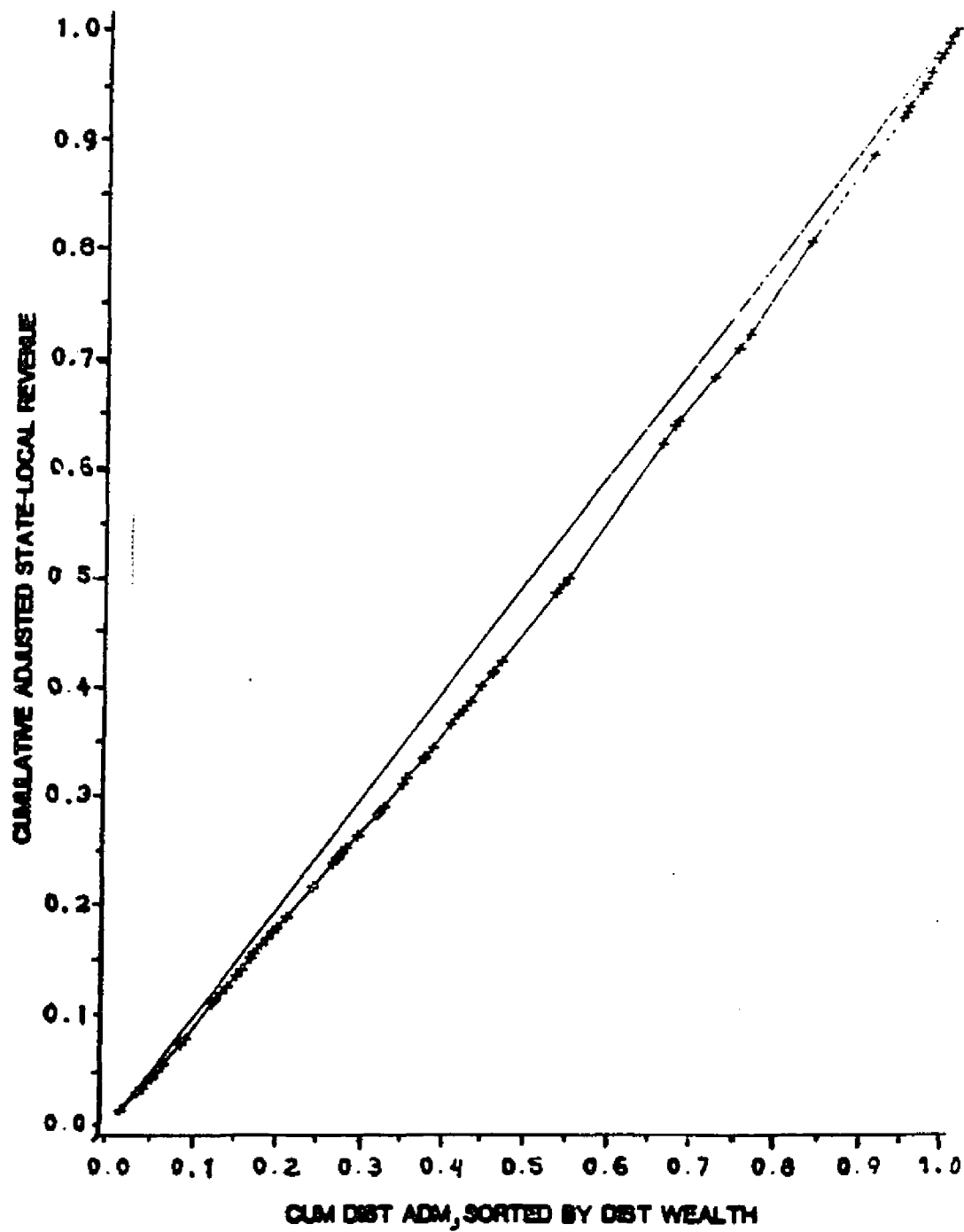
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND SALES BASE PER ADM, 1981-82



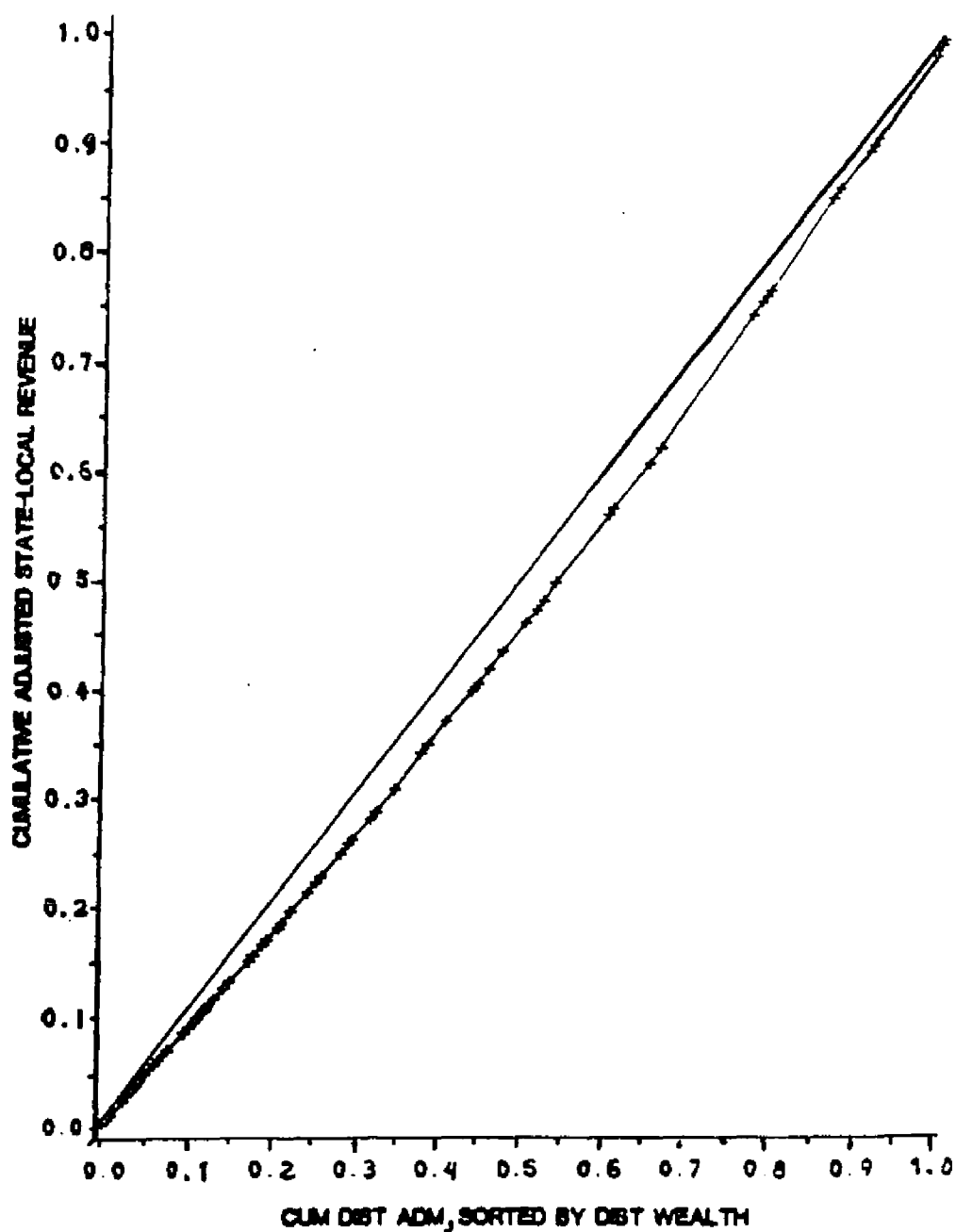
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND COMBINED PROPERTY VAL AND SALES BASE PER ADM, 1981-82



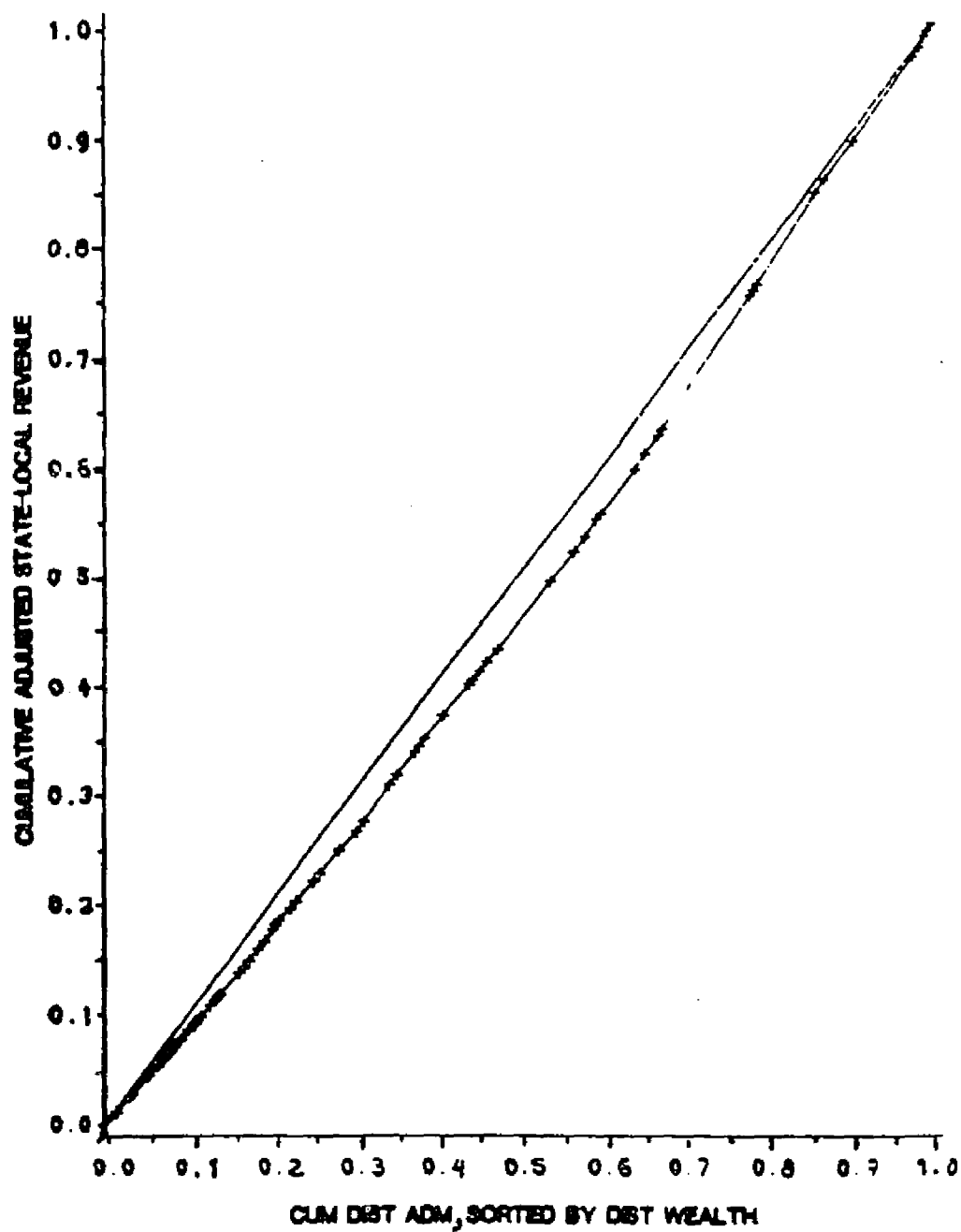
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND PROPERTY VALUATION PER ADM, 1983-84



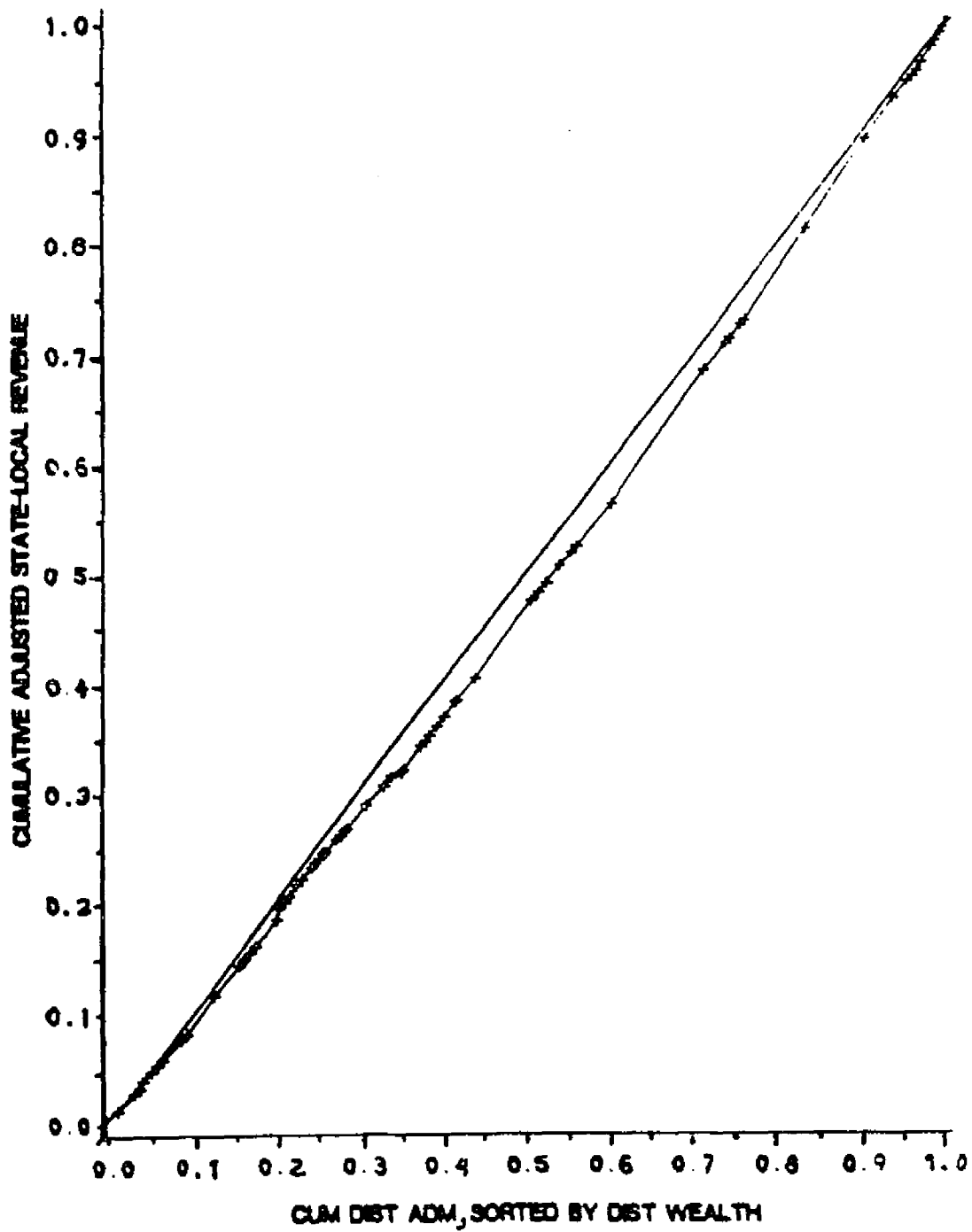
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND SALES BASE PER ADM, 1983-84



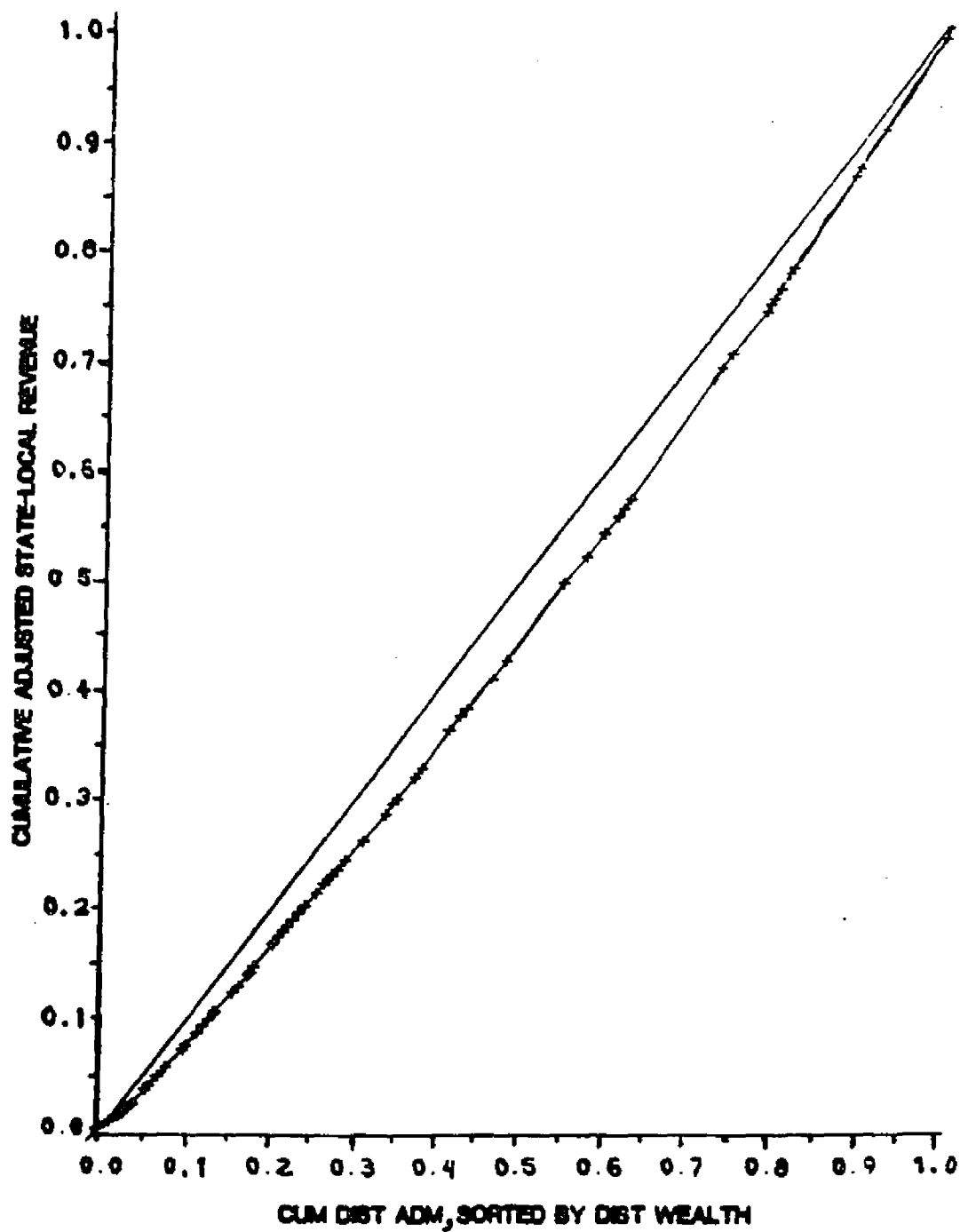
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REVENUE AND COMBINED PROPERTY VAL AND SALES BASE PER ADM, 1983-84



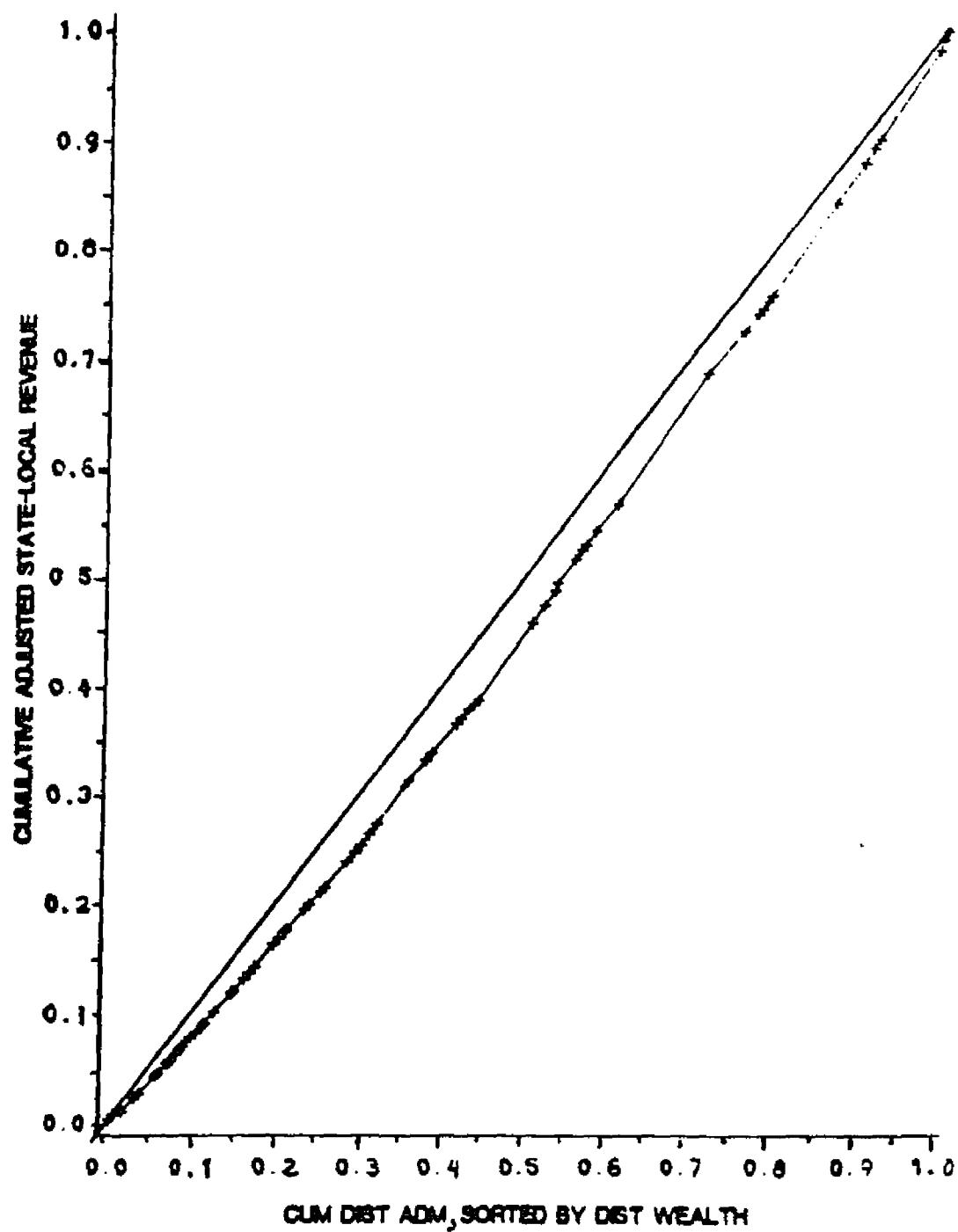
MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND PROPERTY VALUATION PER ADM, 1985-86



MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND SALES BASE PER ADM, 1985-86



MODIFIED LORENZ CURVE FOR LOUISIANA STATE-LOCAL
REVENUE AND COMBINED PROPERTY VAL AND SALES BASE PER ADM.
1985-86



VITA

Barbara Y. LaCost

1988

EDUCATION

- Ph.D. Candidate, Educational Administration, Louisiana State University, Baton Rouge, Louisiana
- M.Ed. Educational Administration (1981), University of Illinois, Champaign-Urbana, Illinois
- B.S. Education (1964), Illinois State University, Normal, Illinois

PROFESSIONAL EXPERIENCE

Research responsibilities at Louisiana State University, Baton Rouge, Louisiana from 1985 to 1988.

Teaching responsibilities in the areas of special education, remedial reading, bilingual education and regular education in Illinois from 1964 to 1985.

ADMINISTRATIVE INTERNSHIP

Completed August, 1979, with the Department of Special Education at the University of Illinois.

PROFESSIONAL ASSOCIATIONS, ACTIVITIES AND HONORARIES

-Selected Participant to the National Graduate Student - Research Seminar in Educational Administration sponsored jointly by University Council for Educational Administrators (UCEA) and the Education Department (1986).

- Recipient of the Dean E. B. Robert Scholarship, 1987.
- Graduate Student Association (GRAD 7) Executive Officer (1986-1988)
- American Education Research Association (1985-present)
- American Educational Finance Association (1986-present)
- The American Evaluation Association (1986-present)
- Phi Delta Kappa (1986-present)
- Council for Exceptional Children (1977-1984)
- Project leader for in-service training for special education (1984).

SCHOLARSHIP

Publications

Geske, Terry G. and Barbara Y. LaCost. (in review).

The Student Equity Effect of the Public School Finance System in Louisiana.

Geske, Terry G. and Barbara Y. LaCost. (1988). The Finance of Public School Facilities in Louisiana: A State Case Study in Inequality. Journal of Education Finance, 13.

LaCost, Barbara Y. and Diana G. Pounder. (1987, October). The Administrative Internship: An Alternative Model. A paper presented at the First Annual Convention of The University Council for Educational Administration, Charlottesville, Virginia (ERIC-RIE. ED number pending).

LaCost, Barbara Y. and Pounder, Diana G. (in review).

The Internship in Educational Administration: An Integrated Model for Adult Learners. UCEA Monograph.

Refereed Papers and Presentations

LaCost, Barbara. (1987, January). Local District Response to Chapter 2: A Venture Continuum. A paper presented at the Southwest Educational Research Association, Dallas, Texas.

Geske, Terry G. and Barbara LaCost. (1986, April). The South's New Economic Prosperity: Are the Public Schools Receiving Some of the Wealth? A paper presented at the Annual Education Research Association Conference, San Francisco, California.

Geske, Terry G. and Barbara LaCost. (1986, February). Economic Prosperity in the South (Tennessee, North Carolina and Louisiana): Are the Public Schools Receiving Some of the Wealth? A paper presented at the Conference for the Southeast Region of Division G of the American Education Research Association, Baton Rouge, Louisiana.

CERTIFICATION

Illinois Certification

Educational Administration

K-9; Resource in Spanish

Approved certification for special education-
learning disabled


DOCTORAL EXAMINATION AND DISSERTATION REPORT


Candidate: Barbara Yates LaCost

Major Field: Education (Administration)

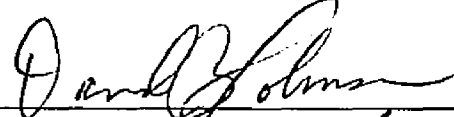
Title of Dissertation: An Investigation of the Student Equity Effects of the
Public School Finance System in Louisiana

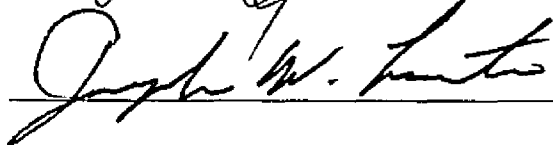
Approved:


Major Professor and Chairman


Dean of the Graduate School

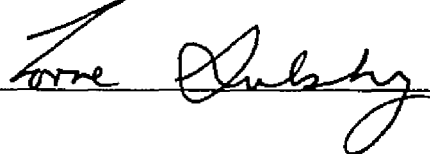
EXAMINING COMMITTEE:











Date of Examination: _____

November 8, 1988